Telephony.

THE AMERICAN TELEPHONE JOURNAL

PUBLISHED EVERY SATURDAY.
TELEPHONY PUBLISHING COMPANY
VOL. 72 NO. 24.

CHICAGO, JUNE 16, 1917.

SINGLE COPIES, 10 CENTS
YEARLY, U. S. A., $3; CANADA, $4
ALL OTHER COUNTRIES, $5

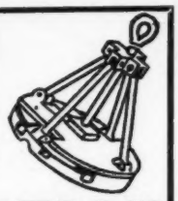
Why Sell to Us?

Because we pay the highest prices for *Obsolete Telephone Equipment* and *Scrap Platinum*.

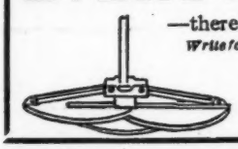
The Mutual Smelting & Refining Co.
114 No. Front Street, Columbus, Ohio

You will

go around in a circle if you are looking for a better anchor than the



EVERSTICK



—there's a reason.
Write for literature

EVERSTICK Anchor Co.
St. Louis, Mo.

elapsed time is the basis of your toll talk profits:

insert the toll ticket here to record elapsed time

CALCULAGRAPH

those toll charges and eliminate errors and disputes.

CALCULAGRAPH CO.
Dept. 16, 30 Church St., New York City

American Steel & Wire Co.'s

W. & M. TELEPHONE WIRE

AMERICAN STEEL & WIRE CO.
Chicago New York Cleveland
Worcester Pittsburgh Denver

CEDAR POLES

Wire or write for delivered prices

NATIONAL POLE CO.
ESCANABA :: :: MICH.

McMEEN & MILLER

(Incorporated)

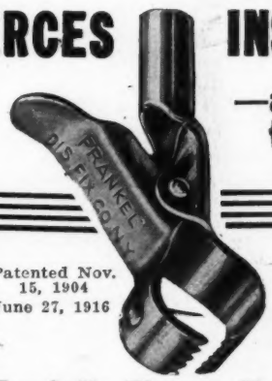
ENGINEERS

Investigations Appraisals
Reports for
Financing Operating Rate
Adjusting of
PUBLIC UTILITY PROPERTIES

1454 Monadnock Block Chicago

PIERCES INSULATION

—an immediate test connection



Patented Nov. 15, 1904
June 27, 1916

Frankel's Electric Testing Clips
secure a perfect test connection in 10 seconds.

PRICES:

No. 2521—Less than 12	20c
12 lots	12½c
100 lots	11c
500 lots	10c

Net f. o. b. New York, from your supply house.

MAKERS OF THE BEST ONLY
FRANKEL
CONNECTOR CO. INC. N.Y.

Edward E. Clement

Attorney at Law & Electrical Engineer

PATENTS

Soliciting, Consultation, Reports, Opinions

Office: McLachlen Building
700 Tenth Street, Washington, D. C.

Telephone Cables

ALL SIZES AND CAPACITIES

Hard Drawn Copper Telephone Wire.
Galvanized Iron Telephone Wire.
Siemens-Martin and High Strength Strands.

AMERICAN ELECTRICAL WORKS
PHILLIPSDALE, R. I.

CHICAGO—112 W. Adams St.
CINCINNATI—Traction Bldg.
NEW YORK—165 Broadway

Matthews Scrulix Anchors

ARMCO → ← ROD

First Patented the market and

Anchor on it is still first

W. N. Matthews & Bro., Inc.
St. Louis, Mo.

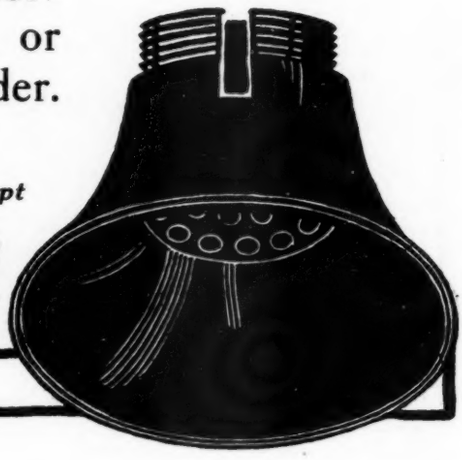
INSULATE

THE BEST GUARANTEE FOR QUALITY

Receiver Cases, Mouthpieces, Knobs, Inter-Connection Blocks or special articles to order.

Facilities unsurpassed

Deliveries prompt

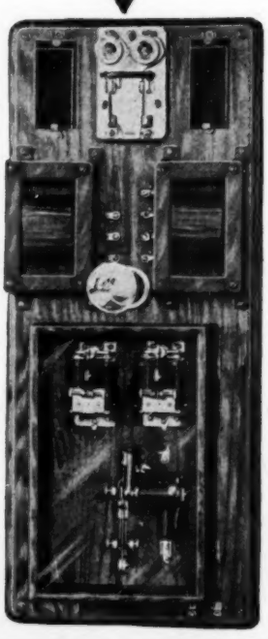


GENERAL INSULATE COMPANY

1008-1015 Atlantic Ave., Brooklyn, N. Y.

Ring Your Telephones From Your Lighting Circuit

Connect Your Lighting Circuit Here



30c to 75c per month Total Operating Cost

For Power Ringing in Your Exchange

No Dry Batteries

No Wet Batteries

Operates Off A.C.orD.C. Current Lighting Circuit

The only vibrating ringing machine that operates successfully when connected directly to a 60 cycle 110 to 120 volt lighting circuit.

Over 1000 exchanges have availed themselves of the advantages of Leich Ringing Machines.

Prompt delivery can be made.

We also make machines for 220, 110, 40, 30 and 24 volt direct current circuits.

Write us for information regarding our Harmonic Converters and straight line ringing machines which operate off storage batteries and which at the same time charge the storage batteries. This provides a constant source of ringing power. The batteries will carry your ringing load during the time your power is off.

It will be to your interest to investigate these battery machines if your power is not available 24 hours per day.

The most economical line of ringing machines for all systems.

Shipped on 30 days approval.

Patents Pending On All Types.

Leich Electric Co.

Genoa, Ill. **Kansas City, Mo.**

DISTRIBUTORS:

Electric Appliance Company, Chicago, Dallas — **San Francisco, New Orleans** — **St. Paul Electric Co., 316 Robert St., St. Paul, Minn.**

Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone, Sound Waves

PUBLISHED WEEKLY BY THE TELEPHONY PUBLISHING COMPANY
MONADNOCK BLOCK, CHICAGO
EASTERN OFFICE: 52 VANDERBILT AVE., NEW YORK CITY

J. C. KELSEY, PRESIDENT AND EDITOR.
S. R. EDWARDS, MANAGING EDITOR.

H. D. FARGO, SECRETARY AND TREASURER.
J. R. HASTIE, VICE-PRESIDENT AND ADVERTISING MANAGER.

Entered as second-class matter September 4, 1908, at the post office at Chicago, Ill., under act of March 3, 1897

Volume 72
Number 24

CHICAGO, SATURDAY, JUNE 16, 1917

Subscription—10 Cents a Copy
$3 a Year U. S., Cuba and Mexico
$4 Canada, $5 Other Countries

By the Way—

No one can deny that a state public utility commission is designed to insure the public of that state the best service from its utilities.

The Illinois commission, which enjoined the Postal Telephone-Cable Co. from furnishing long distance telephone service until it obtained a certificate of convenience, should wake up, and get its bearings on the reason for its existence.

The practical effect of that ruling is to give the Bell system a monopoly. Down South the Postal is giving the public competition in long distance telephone business, which, it is asserted, has resulted in better and cheaper service.

The outcome of this Illinois case, now in court, will throw a light on the question as to whether the commission is working for the Bell organization or the public.

Mutual Companies Learning.

State public utility commissions have quite generally ruled where mutual telephone companies are serving stockholders and non-stockholders at different rates, that discrimination exists and service must be given all subscribers at the same rates.

The farmers mutual telephone companies have been the cause of much difficulty and a few gray hairs to managers of commercial companies, but it now seems that some of the former are learning that they cannot furnish real telephone service at a lower price than the commercial companies. They are learning that business methods must be adopted. Some of them have found this out through investigation forced upon them and others through sad experience.

Just recently a Nebraska company found out that its stockholders were really paying more for service than non-stockholders who paid a fixed rental. The company's policy was to charge non-stockholders what it believed proper rates, and then distribute dividends in the shape of reduced rates to stockholders. But allowing for interest on their investment and for other elements, it was discovered that they were really paying more for service than non-stockholders. So a uniform rate goes into effect for all subscribers.

The South Dakota commission discovered a mutual company which operated on an assessment basis and required all subscribers to be stockholders. After a thorough investigation, the commission ordered that the company discontinue this practice and establish a schedule of rates for telephone service and rental of instruments, and that it take over from stockholders the lines and instruments now owned by them.

In these days of high and rising costs, the mutual companies undoubtedly will find that their costs for service, if the proper charges are made, are much higher than the rates which commercial companies are receiving. It would appear that the commercial companies will now have opportunity to discuss telephone service with the rural patrons and be received in an appreciative manner.

The Telephone's Importance.

The utility and efficiency of the telephone is now fully recognized by the United States governmental authorities according to a late statement issued by the Council of National Defense. Since the declaration of war in April the telephone facilities of the country, both local and long distance, but especially the latter, have been greatly augmented. The various telephone and telegraph interests have co-operated with official Washington to make certain that whatever is required in the way of communication will be available when needed.

Facilities are now available which make it possible to reach all sections of the country from Washington. In round figures, the government has at its disposal approximately 20,000,000 miles of exchange and long distance wires, with connection to over 10,000,000 telephone stations. Provision is made so that should one route be unavailable, other routings can be used without delay—a most important advantage.

With the assembling in the various concentration camps of the new army of 500,000 to 1,500,000 men, the telephone will be one of the essential factors not only in providing local communication but in keeping Washington in close touch with the progress and developments.

Motor Transportation in Telephony

Third of a Series Dealing with the Use of Motor Vehicles by Telephone Companies—The Selection and Buying of Motor Trucks for Telephone Service—Three General Types of Telephone Trucks—The Compartment Truck a Favorite

By Rollin W. Hutchinson, Jr.

The selection and buying of motor trucks is a problem of so many individual factors that only a few general points can be laid down for guidance in individual analysis of whether motor vehicles are really needed for the particular conditions.

The principal governing factor in determining whether some kind of motor vehicle should be used is the radius of territory over which telephone companies' lines extend. In towns of 1,000 to 5,000 population, although the lines may extend six or eight miles from the exchange, a motor vehicle of any kind—even a motor cycle—may be wholly unnecessary because, after the installation, due to climatic and installation propitiousness, the maintenance of a line may resolve itself into a problem of merely periodic inspection, battery or subscriber set replacement, etc., for which a man-powered vehicle, bicycle or motorcycle may be quite adequate.

Truck With Tool Compartments Greatly Favored by Construction Department.

The multitude of factors in smaller communities make it impossible to describe any definite set of conditions where some kind of motor vehicle could be profitably used. In northern climates where in summer electrical storms are frequent and in winter heavy sleet storms do havoc to aerial lines, a motor truck may be profitably used for line maintenance alone in towns of 2,000 or 10,000 population.

The number of subscribers, or telephonic density, is a large factor—to say nothing of the possible return on the investment entirely outside of the betterment of service by motor transportation. To illustrate: Although where climatic conditions put telephone service frequently out of commission and the operating company has only an investment of $5,000, it would hardly be warranted in expending 20 or 30 per cent. of its capitalization even with the admitted monetary economy and service-efficiency which the motor truck would bring about.

Between the two extremes of undesirability and unprofitability in the usage of motor trucks lie such a multitude of individual conditions which cannot even be catalogued in a general way, that decision "to motorize or not to motorize" must be made by individual research and study. There are situations where a motor truck would not be warranted strictly as an investment, considering the amount of usage to which it can be profitably put, *yet which would make it a big business asset even when operated at a loss.* An illustration might be:

A company in a town of 10,000 population has been compelled to retire from the field because of mismanagement and indifference to subscribers' definition of service from a public utility. The subscribers have been reduced to barely 200 out of a possible 2,000. A new company has taken over the property. In spite of the fact that the 200 subscribers could be served with a motorcycle, it wisely invests in a 1,500-lb. truck.

The truck is rarely used to one-fifth its capacity, yet it has been an investment in good will—an advertising asset to the new company which would make it pay a good return on twice the capital outlay which it required. The reason is obvious: The truck by *its constant appearance on the public streets introduced an "atmosphere" of progressiveness which quickly ingratiated public confidence in the new company because it exhibited new and modern methods of service.* As a result, the patronage during the first year of the operation of the new company was brought close to the 1,000-mark.

Let it not be forgotten, therefore, that the possibilities of motor trucks, *as good will creators,* make them pay good dividends provided the installation of the motor truck is not merely a bluff to mask incompetency of the responsible officials and fundamentally wrong business principles.

In the selection of motor trucks, one may make an *investment* or a *mere purchase.* As in all machinery or commodities, one can get in motor trucks *what he is able or willing to pay for.* Actual or intrinsic value and speculative purchases should be clearly differentiated in the mind of the buyer in the selection of motor trucks. False and true values in motor trucks can be ascertained by knowing *that a certain price obtains for trucks of a certain size and of known value.* Below this price standard lie a number of makes which, while representing to a greater or less degree value for what they cost, *are not maximum values regarded as investments.* Most of them, true, are worth what they cost but they are not 100 per cent. value in economy.

The discerning investor, as distinguished from the mere purchaser, is cautioned to analyze whether his utilization of trucks *is to be an investment* or a *temporary experiment.* The fullest value in motor trucks *is that truck which gives the longest years of service, irrespective of price. Price may or may not be the criterion of real value.* Herein lies the necessity for studious care in selecting the makes of trucks with wide discrepancy between "asking" and "taking" prices.

Price may be a blind which masks expensive manufacturing and extravagant selling expense. Since motor truck manufacturers vary as do telephone companies, in the caliber of their administrative and operating personnel—being classified in the three grades of "good, indifferent and *no good*"—how then shall

telephone investors seeking real value for the price demanded, differentiate the various classes of motor trucks in the various capacity ranges? Only by a process of comparison and elimination in which either outside or inside of the organization talent should be freely consulted.

Telephone engineers may or may not be competent judges of values in motor trucks. Many that are, unfortunately, are not consulted, the selection being made by the executive staff entirely. This is wrong. The technical staff can prevent serious blunders when delegated with the responsibility of getting the most value for the least possible expenditure. Pretty lines and pretty paint may make some trucks superbly fine externally, but, unfortunately, there is a certain number of makes of trucks in which these mere externals have been concentrated upon to blind the judgment of the unsophisticated who do not make a study of the "innards" of any mechanism they purchase.

Price is, therefore, no unalloyed criterion of value in a motor truck. It would be unfair and misleading to attempt to wisely direct a prospective truck buyer to select any particular size of machine on its catalog list price. There is, however, an approximate scale of "asking" prices for different sizes of motor trucks between the limits of which lie trucks that can be called real investments as distinguished from mere purchases. The following table of prices for first-class motor trucks is therefore given only as a rough approximation of values:

1,000-lb. truck	$ 650	to	$ 850
1,500-lb. truck	750	to	1,090
2,000-lb. truck	1,400	to	1,850
3,000-lb. truck	1,650	to	2,150
4,000-lb. truck	2,350	to	3,000
5,000-lb. truck	2,550	to	3,000
6,000-lb. truck	2,550	to	3,650
7,000-lb. truck	3,150	to	3,650
8,000-lb. truck	3,550	to	4,000
10,000-lb. truck	4,000	to	4,500
12,000-lb. truck	4,500	to	4,750
14,000-lb. truck	4,750	to	5,000

There is, unfortunately, no method of determining an investment truck and a temporary purchase truck except by weighing the mechanical specifications of a number of makes of the same nominal capacity rating and, by personal examination, determining what is very important for the prospective truck buyer to know—*that specifications alone are not criteria of value and that of two trucks of different makes of practically the same specifications, one may be an investment, the other a mere "buy" type of truck,* and yet both may be listed at the same price.

Motor trucks, with three or four exceptions, consist of an assemblage of components or parts designed and built by specialists. They are united or assembled in the producer's shops whose nameplate is applied to a vehicle of which not more than one-eighth is manufactured in the builder's own establishment.

The standardization of truck components such as engines, axles, transmission, frames, and wheels, makes it easily possible for anybody with the requisite capital to become a motor truck manufacturer. As a result, there is a considerable number of makes of trucks containing the same makes of engines, axles, etc. It is also a peculiar fact that many makes with the identical line-up of parts, show variations of as high as 30 per cent. from list prices in trucks of the same capacity. *Some are designed trucks —others merely "hooked up" trucks.* For let not the mistake be made that, of any two trucks of the same size using the same build of engine, the same transmission and the same axles, the two cars will perform uniformly alike.

The layman and often the technical buyer do not consider the fact that while the engine, transmissions and axles are vital in their correlated function to make a successful truck, there are a multitude of inter-related and intermediate factors in the details of construction which make or break a truck. These factors are classed under the general heading of mechanical unity or balance.

One may distinguish a "rule of thumb" creation from a truly engineered motor truck by general appearance, of proportion and fitness of details in relation to the main components. The skimpy appearance of bolts and nuts—the little things that hold the main things together—will condemn the "hooked-up" truck whose seller emphasizes, "The same units, yes, as the Great Hercules uses, but my Helvetia truck costs you $700 less." While the Helvetia may use the same components, it may still be a "heluva" truck as a gift. Likewise may it be as good as the Great Hercules. It depends upon whether it is a "just happened" or "designed" truck, whether a real business organization builds it or a get-rich-quick mushroomer.

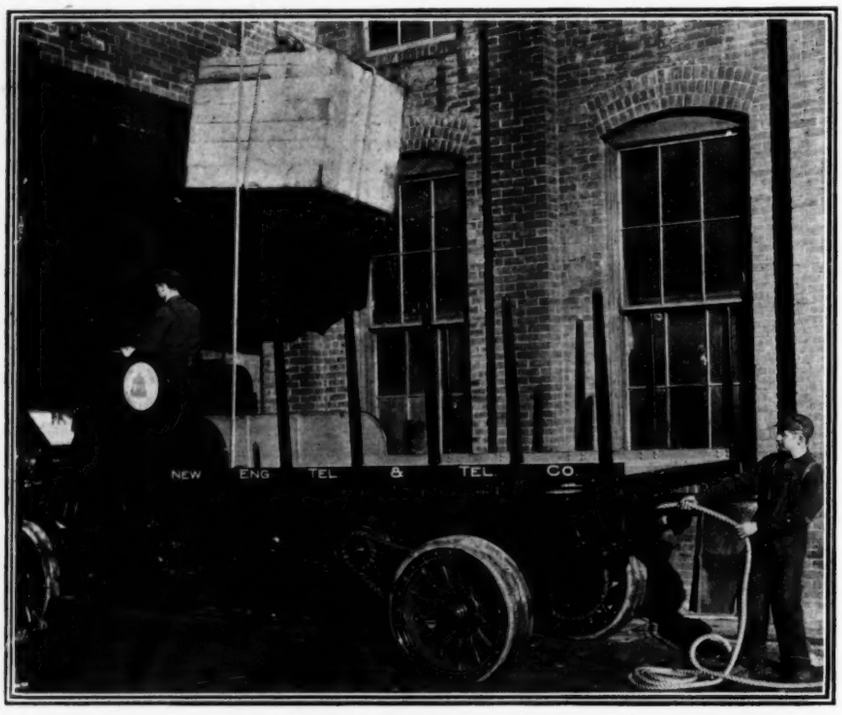
In older mechanical industries there are standards of steels, proportioning measurements, factors of safety, quality of workmanship, etc., which make any two machines of the same rating of different make closely approximate each other in performance results, durability and economy of operation, maintenance expense, efficiency, etc. But in a new industry, as is the motor truck business, it is to be expected that each manufacturer is establishing his own standards, due to lack of co-operative action in the industry.

The difference between these standards is rather wide. While today there are few makes of trucks that are not worth what one must pay for them, there are, however, still some manufacturers who, to decrease selling resistance, are listing as two-ton trucks, for example, machines that on every percentage count in comparison with the *investment kind of truck manufacturers' standards,* would not be rated more than a one to 1¼-ton truck.

Some of these trucks are sold on price appeal only by misleading the buyer with a grossly-inflated load rating for the actual factors of safety built into the machine. The result is that an unsophisticated purchaser, thinking he is getting a two-ton truck and counting the manufacturer as conservative, puts on a steady diet of 2½ tons on a unit which

The Line Gang Finds the Compartment Truck to Be a Regular Storeroom.

has been designed with factors of safety for one to 1½-ton loads. When the vital mechanism and all the subordinate details are overstrained, the machine soon begins to go to pieces under this unfair abuse. It is not altogether safe in selecting motor trucks to rely entirely upon the capacity nameplate, since by this, perhaps, a truck may be unwittingly misfitted by the seller and accepted by the buyer purely on the representation of the capacity load plate.



The Power Winch on a Heavy-Duty Truck May Be Used for Various Purposes.

There is an old saw which goes: "Weigh, gauge and measure everything you buy." While weighing, gauging and measuring a motor truck may protect the buyer to a considerable degree, in the final analysis the manufacturer himself, who expects to stay in business, is protecting the buying public against this necessity by giving him an honest truck, honestly rated and as honestly built as he knows how to build.

There will continue to be, even after the declining number of makes of poor trucks has almost disappeared, differences in design and construction. These will cause one make of truck to appeal to one who invests in individual ideas more than will another, even though the old saw, "Weigh, gauge and measure," shows that, point for point in physical operations, two makes—or several that may be under observation—have distinctive advantages mechanically, one over the other, and which in turn affects the efficiency and economy. There is no monopoly of motor truck engineering brains, so there will continue to be, even when manufacturers have eventually agreed upon standards, superiorities of one truck over another, which it is the function of the buyer to ascertain through the seller's legitimate comparison, through his own common sense and advice which he can obtain from mechanical experts on his staff.

The day is rapidly passing when the purchaser of a motor truck can rightfully consider that the seller has a paternal interest in the property so long as a spoke remains in the wheels. A few years back when motor trucks were not yet out of the experimental stage, the buyer had a real reason for demanding the seller's proprietary interest in the truck when it had passed out of his hands. To a degree, this proprietary interest of the seller must persist, *but service by the truck seller has altogether a different definition from that which was formerly accepted between seller and buyer.*

Such mechanical and constructional improvements in motor trucks which have come about during the past three years have relegated to permanent discard the idea that a motor truck buyer could use the seller's service establishment as his own property and give his motor trucks *roundhouse attention entirely at the seller's expense.* Motor trucks, of the investment kind, have now reached a standard of mechanical perfection which approximates the standard of any other machinery. They are being sold on the intelligent, common-sense basis that the user is responsible for machinery over which the seller cannot exercise proprietary control; that the responsibility of the seller extends only to the maintenance of the manufacturer's warranty as to the quality of materials and workmanship; and that the machine will functionate, when intelligently used, as represented by the manufacturer. In a word, reasonable service on the seller's part is now expressed briefly as "facilities to serve" and not "paternalism" or "free service."

The performance of motor trucks under a prescribed set of conditions can be as accurately predetermined as the performance of an electric generator, a stamping mill, rock crusher, air compresser or any other mechanical institution. Therefore, it is utterly unreasonable—and the sensible truck user now accepts it as such—to expect of the seller anything more than the stability of himself and his manufacturer to maintain a reasonable warranty against defective materials and workmanship, to hold himself in readiness to supply in a reasonable time any needed replacement or spare part; to make any ordinary or extraordinary adjustments promptly; and to provide his customer with inspection at periodic intervals and counsel on obvious abuse or misuse of any mechanical institution over which the seller cannot exercise any proprietary control since it would be an invasion of personal liberty.

When the seller has provided facilities to serve and the buyer has made reasonable investigation to satisfy himself, first of all, that the manufacturer of the truck he selects is in business permanently and that he can within the anticipated life of the truck obtain replacement parts conveniently and at fair prices, *the definition of service has been reasonably satisfied.*

The motor truck industry is in process of evolution. The prosperity of the last two years has brought into the industry inexperienced builders who have been attracted by the surplus of orders which the older and larger companies have been unable to fill on account of their enormous export business.

The history of the bicycle business and the mowing machine business will be duplicated in the history of the motor truck industry, i. e., there will be a weeding out of the incompetents and get-rich-quick element when the inevitable readjustment and elimination period is reached. Consequently, the telephone buyer should consider in his search for the best intrinsic value for the outlay he can make, not only the machine, per se, but the service value back of his investment.

Some of the mushroomers in the truck business, who are making a good product, will be passed up by the investigating buyer who counts service value as expressed in the ability of the manufacturer to stay in business, to supply him with the inevitably needed repair parts, irrespective of the quality of the truck, as an inseparable part of his investment

outlay. It is unfair to condemn a new company as being of speculative continuance in the business merely because it is new, for a number of the newer companies, with business management from men who have come into them from stable mechanical industries, will be among the survivors of the fittest.

It should not be forgotten, however, that permanency of service at a reasonable price and reasonable promptness is just as much a part of value in a motor truck as good design and good construction, for the *best designed and built motor truck without service is an expensive liability as a gift.* It is far wiser to invest in a second or third class motor truck with permanent service behind it, than a superior truck whose manufacturer and seller will not remain in business.

The mixed and widely different character of weights per cubic foot of telephone materials make it very essential that careful consideration be given to the design and construction of the type of body used by such public service corporations. Three general types of bodies for telephone trucks are in use:

1. Light delivery trucks with full enclosed panel bodies for keeping dry material subject to damage by the elements.
2. Trucks of 1,500 to 4,000 lbs. capacity usually equipped with either panel-type, closed body, or open express bodies, with solid tops or open bodies with side racks with tool compartments fitted on the outside or in the rear.
3. Heavy duty trucks with plain platform sockets for stakes which are applied with the tarpaulin top in inclement weather.

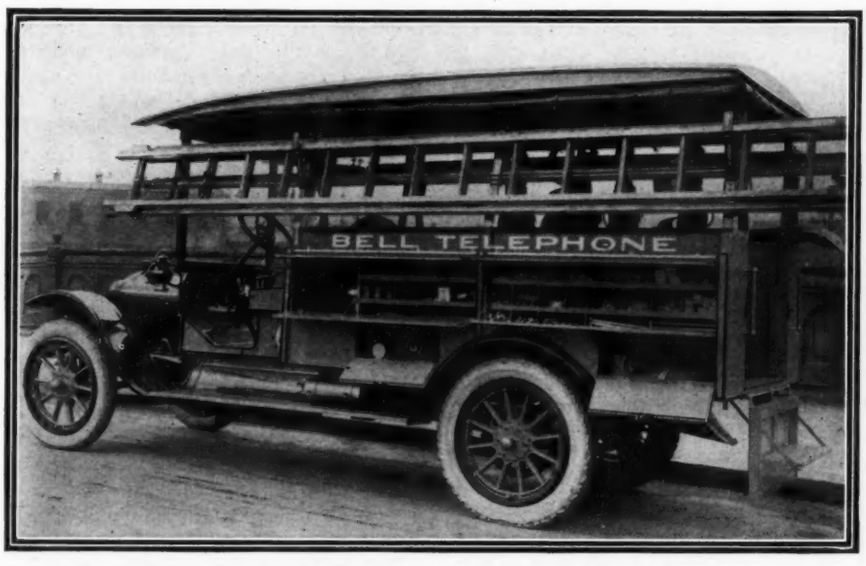
In many cases, telephone companies have simply purchased the stock bodies of truck builders who, having limited knowledge of the peculiar and miscellaneous character of loads, have not worked out in their body engineering departments the most efficient types of bodies to give the best load distribution, convenience of loading and unloading, and durability. In consequence of this, most light-duty trucks in telephone service are under-loaded or over-loaded most of the time.

Either of these conditions is unprofitable and does not contribute to the utmost in satisfaction of public service corporations with motor vehicles. It behooves the technical staffs of telephone companies and the body engineers of truck manufacturers to collaborate so that the truck builder may more intelligently equip telephone companies' truck chassis with accurately designed load containers.

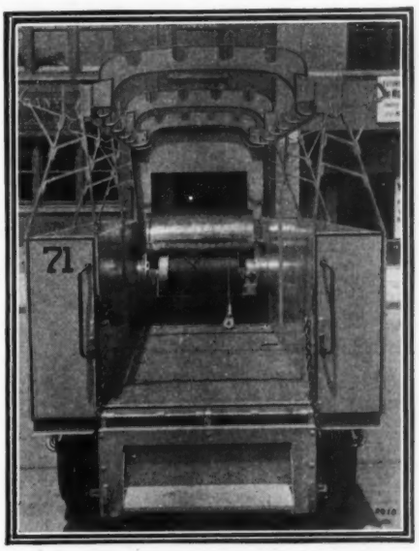
The compartment telephone body shown in the illustrations is an example of intelligent design in bodies for carrying an assortment of tools for line construction and maintenance. Each particular tool is carried in a particular receptacle, easily accessible to the workmen. Lost time in searching in a "hodge-podge" assortment is thus eliminated.

The body is of the semi-box type, 12 ft. long, 4½ ft. wide and 3½ ft. high. A large chest with shelves and drawers is fitted on each side, both running the entire length of the body and extending out to a line approximately flush with the outside face of the rear wheel. Longitudinal stringers, level with the top of the driver's cab, are carried above the boxes on both sides on A-shaped metal uprights, fitted with brackets to carry ladder and pike poles. Three wooden cross members are provided to sit on top of the longitudinal stringers to support a tarpaulin cover in rainy weather.

Each side chest is divided into two main vertical compartments, the hindmost one with slightly less space than the forward one, due to the undercut wheel housing made necessary by the wide body. Each compartment is further subdivided into pigeon holes, cupboards and drawers, each to carry some particular tool needed by line and inside men. Tools, such as hammers and chisels, are carried in loops of leather nailed to the sides of the large compartments in the forward division of the chest. Tools and equipment carried in the chests are protected while the truck is en route by means of doors hinged to the top and bottom and swinging up and down, respectively.



Side View of Truck, Showing the Various Compartments.



Compartment Truck, End View.

The clear space in the body is used for carrying large pieces of material—reels of wire, batteries, generators, etc. Seats are also provided for construction men inside the body, the foreman and his assistant generally riding with the driver. Ladders are hung on the brackets on the outside of the "A" frames. Brackets bolted to the inside of the stringers carry coils of rope, shovels, wire, etc.

For the maintenance of the long distance lines projected over country, there is needed what is known in Great Britain as the "colonial" type of truck. This is a truck with larger diameter wheels than one designed for city service, giving greater ground clearance. It has lower gear ratios and is powered so that when equipped with the winch, it can go over roads where even a three-horse team would be stalled. The four-wheel drive type of truck which, however, is only made now in this country in capacities of two tons and upwards, has a great field of usefulness in long distance country telephone line construction and maintenance.

Farmers Mutual to Sell.

The Famers Mutual Telephone Co., which operates about 125 rural telephones in the vicinity of Unionville, Mo., has decided to sell out to the D. G. Evans Telephone Co., of Unionville.

Long Life Rural Construction

Increasing the Life of Rural Lines by Butt-Treating Poles, Using Properly Sized Cross Arms, Steel Pins and Bullet-Defying Porcelain Insulators, Together With Galvanized Hardware—Paper Presented at The Kansas Convention

By Harry N. Faris

The writer recently had occasion to ride over a Kansas farm lead built in 1904 paralleled by a three-circuit toll lead built in 1902. These lines, 12 and 14 years old, respectively, afforded an excellent opportunity to study depreciation, as it exists in Kansas, since they showed which portions of such construction give way first and where greater strength and durability are needed to secure longer and more uniform life.

The toll line in question represented the average construction of 14 years ago. The poles were six-in. 25-ft. Michigan white cedar, untreated, set five ft. The cross arms were 3¼ ins. by 4¼ ins. by 6-ft., unpainted fir put on with ⅝ in. plain machine bolts and 26-in. plain braces. The pins were 1¼ ins. by 9 ins. locust with "long distance regular" glass insulators. A No. 10 B. B. iron circuit of the American Steel & Wire Co.'s Washburn and Moen grade was strung on the pole pins and a No. 10 B. & S. gage copper circuit was strung on each side.

A Typical Toll Line.

This toll line has given splendid service at small maintenance expense. Protection from fire has made it necessary to go over the line every fall and scrape a bare spot around each exposed pole, which served to retard neck rot, so that it was not necessary to overhaul the line until the 11th year, when all poles that could be cracked with a pike were reset and at the same time the old "Butterfly" transpositions were cut out and changed to the running type.

Over 80 per cent. of the original poles have not been reset and had the pole butts been cold treated with the best quality of creosote oil, the writer is convinced the entire line would still be good for ten years, while a hot tank treatment of the same oil would have insured in the Kansas climate a total life of 30 to 35 years, which old Western Union lines show to be the approximate life of such poles above ground.

This line will have to be reset in a few years and because many portions cannot be lowered, new poles will be required and the completed job will be a bad mixture of new and old poles. Hot treated butts would have avoided this expense and after a doubled life the line could be completely reset with new poles treated to last for another generation.

But to carry out this idea of minimum depreciation other portions of the line must have attention. The former idea that unpainted fir arms would last as long as the poles is exploded by the condition of the arms in this line. Not many have been replaced but the arms are in bad condition and many of them will require renewal by the time the poles require resetting. Government tests on fir timber indicate that a hot dip in creasote oil would afford a well seasoned fir arm a useful life of a generation or make it equal in life to a hot butt treated pole.

Untreated Fir Arms.

The principal arm decay in this case seems to be in the pin hole and the hedge pins used were evidently under size, and in low places in the line many have pulled out where the nails have been turned by the hard wood when the arms were pinned up.

Although wholly free from smoke conditions the plain hardware is badly rusted and pitted, showing that only hot galvanized hardware should be considered for permanent work.

The galvanized line wire shows very little deterioration and the writer believes there is no danger of its requiring renewal, before it has given at least 30 years of service, which life, it is further believed, can be counted on for No. 12 B. B. wire of standard manufacture in rural lines.

Creosote Treatment and Galvanized

In short, hot creosote dip for pole butts, cross arms and pins and hot galvanized hardware seems to be all that is required to make such toll lines last for a generation and we leave to your individual consideration and settlement the question—"Is it not worth while?"

The 12-year old rural lead previously mentioned represents the average farm construction of that time. The poles for cross arm leads are 5 ins. 25 ft., untreated, set about four ft. The cross arms are 2¾ ins. by 3¾ ins. unpainted fir, four to ten-pin, fitted with 1¼ by 8 in. regular grade locust pins. Plain hardware of the lightest obtainable weight has been used with No. 9 glass insulators for straight-away and No. 12 double groove on corners and dead ends.

This line is in deplorable condition, due not only to inadequate and improper guying, but also to the cross arms breaking under the strain of ten No. 12 B. B. wires—although this section has been remarkably fortunate in having enjoyed almost complete freedom from sleet. A moderately severe sleet with the line in its present condition would result in a complete interruption of service, the making of temporary repairs at heavy expense and the complete rebuilding of all corners during the following season.

The question thus presents itself—Can the life of rural lines be increased and their maintenance reduced by any changes in construction not involving an expense that is prohibitive to the smaller companies and individual ownerships?

The writer believes that the present deep-seated ideas as to low cost of rural service does not justify the investment necessary for the building of rural lines with as heavy construction as would be used with the same weight of toll circuits. The rural construction is located closer to headquarters and at prevailing rates the patron is not paying for insurance against service interruption.

Butt Treatment of Poles.

But when the sizes and grades of poles to be used has been determined, everything possible should be done to make such poles last as long as possible. We therefore believe that no rural poles should be set without being butt treated. For the smaller poles, however, pouring the hot creosote over the butts and catching drippings in shallow pans to be reheated may be substituted for boiling in a tank and at a considerable saving in cost due to the smaller quantity of oil absorbed, the idea being to put only enough oil into the butt to make it last as long as the smaller pole will above ground.

The use of hot galvanized hardware and the best grades of B. B. wire solves that portion of the problem, and we find our greatest difficulty in connection with the lightweight 2¾ by 3¾ in. ten-pin telephone size cross arms which are none too strong for a load of ten No. 12 B. B. wires when new and which are wholly inadequate after becoming weakened by the ravages of time.

Hot dipping such arms will retard deterioration and greatly prolong their life, but it does not increase their initial strength which is not sufficient to afford the margin of safety which all construction should have, and the real problem in connection with rural lines is that of securing an arm with greater net cross section.

Telephone arms bored for 1¼ in. pin holes have a net cross section exclusive of the pin hole amounting to only 5⅝ square ins. The use of hardwood pins only 1 in. in diameter below the shoulder has been considered but such special pins are not advisable because of insufficient strength and the only method up to the present time of securing a cross arm with a greater net section has been to purchase the 3¼ by 4¼ in. or so-called standard arms.

Ten-pin standard arms are not regularly obtainable in less than the 10-ft. lengths with 12 in. pin spacings. This additional length is not of any particular advantage in the case of rural lines and has the disadvantage of making the lead extend a greater distance over private property when the poles are set close to the property line, as rural line poles should always be placed.

Country lines are not long enough for the increased capacity due to wires being strung only 10 ins. apart, to have any material effect an transmission and if the lines are reasonably well guyed and undue slack is not allowed to remain, there is no noticeable difference in the liability of crosses between the 10 in. and 12 in. spacings, and for this reason an 8½-ft. 3¼ by 4¼ ins. 10-pin arm has come into limited use. These latter arms, however, are entirely special and can be obtained only with great delay, as the manufacturers do not carry blanks in this size from which these special arms can be bored up.

Ten-Pin Fir Arms, Unpainted.	Cost per 100 (1,000 Lots).	Net Cross Section.	—Increase Over Small Arm— Cost.	Cross Section.
2¾x3¾x102 ins.	$49.58	5.625 sq. ins.	.....	.....
Same for ½-in. pins	49.58	8.4375 sq. ins.	None	50 per cent.
3¼x4¼x102 ins.	68.90	8.500 sq. ins.	39 per cent.	51 per cent.
3¼x4¼x120 ins.	76.56	8.500 sq. ins.	54½ per cent.	51 per cent.

Table of Costs and Cross Sections of Telephone Arms.

Therefore, in order to secure an arm with a greater cross section from jobbers' stock it is necessary to take the 10-ft. 10-pin standard arm. From the accompanying table of cross sections and costs it is interesting to note that in going to the standard arm the net cross section has been increased only 51 per cent. while the cost, f. o. b. Missouri river points, has been increased 54½ per cent., and even if the order has been placed months ahead, giving the jobber an opportunity to have the special 8½-ft. arms included in a car from the mill, the cost has still been increased 39 per cent., while the gain in cross section is only 51 per cent.

The above figures take no account of the serious increase in the local freight cost of the heavier arms from the jobber's warehouse to destination and for the average Kansas point the real increase in delivered costs for the heavier arms in the 8½ and 10-ft. lengths would run approximately 45 per cent. and 60 per cent., respectively, with only a gain of 51 per cent in cross section.

Granting that the heavy 8½-ft. special arm is out of the question by reason of slow delivery, is it not a fact that the 51 per cent. gain in cross section is largely offset by the increased length of the 10-ft. arms, so that when the matter of strength is considered too little will have been gained by the use of the 10-ft. heavy arms purchased at 60 per cent. increase in delivered cost?

Increasing Cross Section of Arms.

It, therefore, becomes apparent that the better method of increasing cross section is to reduce the size of the pin hole and from the accompanying table we notice that when the time-honored small telephone arm has been bored for ½ in. steel pins, we effect a gain in cross section of exactly 50 per cent. with no increased cost in connection with the arm itself.

The arm question thus resolves itself into the matter of steel versus wood pins and in this connection we wish to quote from Kellogg bulletin No. 83, as follows:

The question is often asked why the steel pins with wood tops, which have been used exclusively in telegraph work for many years, have not been used to greater extent by telephone companies. Steel pins have never been adopted by long distance telephone companies for copper toll circuits because of the fact, or tradition, as the case may be, that the presence of steel pins would increase the tendency of copper lines to cross talk and render it more difficult to overcome this by transposition; also that the steel pins would offer a slight impedance to the voice current. But it has since been discovered that such disturbed impedance is a benefit rather than a detriment, and thousands of dollars are being spent to secure such impedance for long copper lines in the form of "loading coils."

There is no doubt but that the use of wood pins and the weakening of cross arms by the large borings necessary to accommodate them smacks somewhat of the wooden shoe age; but with the present high cost of wood top steel pins to fit standard telephone insulators and the necessity of ordering telephone cross arms bored "special" for steel pins, they are not likely to come into general use until the demand for them is far greater than at present.

The last objection, namely, the necessity of the jobber carrying arms in stock bored for both ½ in. and 1¼ in. pins, is not as serious as might first be supposed, as the larger jobbers can readily afford to install a 10-pin boring machine while the smaller jobbers can have arms bored up at local planing mills thereby enabling all jobbers to order cross arms in blank and space the pins according to the customers' specifications.

Steel pins have always been much more expensive than wood pins, and, due to unusual conditions prevailing at the present time, they are extremely high in price and difficult to secure. But were they in general use by the smaller telephone companies, the jobbers supplying such companies would be purchasing these pins in such quantities that the mills would be obliged to get out their orders.

Cost of Steel Pins.

The greater cost of steel pins is in a large measure offset by the fact it is not necessary to pin the arms complete as is the case where wood pins are used and when future capacity is being provided for, it frequently happens that the initial investment for steel pins for the present circuits is not greater than the investment for wood pins for the full capacity of the arm.

The general use of steel pins by the smaller companies instead of by the principal railroad and telegraph companies as is now the case, would mean that many of the smaller mills would start making steel pins and that there would soon be a number of sources of supply instead of only two or three as at present, and competition could be depended on to reduce the price to a proper figure.

Without steel pins the telegraph companies would have found it practically impossible to maintain the heavy leads of iron wire following winding railroad rights-of-way. And the writer believes the smaller telephone companies throughout the country are confronted with the same problem in meeting the need for stronger cross arms for their rural lines and we do not believe there is any better solution in sight than the general adoption of ½ in. steel pins for rural lines and city exchanges in connection with 2¾ by 3¾ in. fir arms.

Porcelain Insulators.

As a possible offset to the increased cost of steel pins, I wish to call attention to the possible saving in exchange and rural line work from the use of the new No. 107 and No. 108 porcelain telephone insulators.

Very few porcelain insulators have been used by Independent telephone companies and while many of the porcelain insulators which have been used should be termed clay insulators rather than porcelain, we believe the consensus of opinion is in favor of porcelain in preference to glass by thousands who have used both.

Practically all glass insulators used by

Independent companies in this section have been No. 9, single groove or No. 12, double groove Hemingray insulators or glass insulators of corresponding size and weight as manufactured by other companies. These insulators have never been entirely satisfactory for exchange and rural line work, especially in the country where in spite of all laws and penalties and posted warnings, thousands of insulators are sacrificed every year to the small boy and his target rifle.

A great many telephone men are not aware that it is practically impossible for a porcelain insulator to be damaged either by a shot gun or by a No. 22 caliber target rifle and the boy who attempts to break one of these No. 107 insulators will soon give the job up in disgust.

The use of this smaller insulator will effect no noticeable difference in the insulation of the lines even in time of snow and sleet, for any wet snow that will form a bridge from the line wire to the arm over the small porcelain insulator will also form a similar bridge over a glass insulator. And, as we already know, such conditions do not seriously interfere with the operation of city and country lines of ordinary length, nor is the transmission impaired to any serious extent even while the lines have this high resistance wet snow shunt at each pole. This is largely due to the fact that the absolute purity of the snow or frozen ice, as the case may be, makes the resistance much higher than one would expect.

Comparative Costs of Insulators.

Even in the limited quantities in which they are now being produced, these small porcelain insulators are somewhat lower in cost than glass insulators. And were they generally adopted by telephone companies and the production thereby increased, the price would surely be lowered, as a number of manufacturers of large insulators for power transmission lines who do not manufacture small insulators at all, would be glad to "nest" small insulators with large ones if there was any ready sale for them, as the burning of the small insulators in this manner would represent a very small increased expense.

Another important matter in securing greater mechanical strength on rural lines and in small exchanges, particularly at corners and dead ends, is that of getting the wire as close to the arm as possible instead of tying it at the top of an unnecessarily tall pin.

The adoption of the small porcelain insulator would render it advisable to shorten the present wood pins to 7 ins., which could be done by cutting off the superfluous ¼ in. at the bottom and ¾ in. at the top of the pin, thereby bringing the insulator down close to the arm and affording sturdy construction.

Steel pins for this insulator could be made 7½ ins. in length, the extra ½ in. being below the shoulder to accommodate the nut and washer. Such wood and steel pins could also be used with the No. 9 and No. 12 size glass insulators so that any company's present insulators could be used interchangeably with the proposed new porcelain insulators.

The writer believes these questions worthy of more careful consideration than they have received heretofore. The larger companies having adopted the so-called standard arm and having abandoned telephone size arms altogether, cannot be looked to for much help along these lines. But before going to the enormous additional expense of adopting the heavier standard arms, we would like to see a careful study of the question made by some of the best posted Independent construction men in Kansas and other states, to see if the proposed adoption of ½ in. steel pins and the retaining of the present size arms is not a better way of accomplishing the results desired.

Civil Service Examination for Telephone Inspector.

The United States Civil Service Commission announces an open competitive examination for male telegraph and telephone inspectors on July 17. From the registers of eligibles resulting from this examination certification will be made to fill vacancies as they may occur in this position in the Interstate Commerce Commission under the act providing for the valuation of the property of common carriers, and in positions requiring similar qualifications in other branches of the service, unless it is found to be in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

As a result of this examination three registers of eligibles will be established, the salaries in each case ranging from $1,200 to $1,800 per annum with necessary expenses when absent from headquarters in the discharge of official duties.

Applicants should at once apply for Form 1312, stating the title of the examination, to the Civil Service Commission at Washington, D. C., or any of the branch commissions.

Canvass by Telephone for Sale of Liberty Loan Bonds.

Part of the campaign in Louisville to sell Liberty Loan bonds was managed by telephone. This feature was the campaign for sale of the bonds to the women of the city. The men and the business houses were solicited in a house-to-house canvass by a military organization formed of 1,200 men.

Solicitation of the women was given over to the Women's Emergency Association, an organization composed of representatives of the 52 women's clubs in the city. According to this plan, members selected from each club were furnished with lists of the club women, as well as others, and these women were canvassed by telephone. All were reminded of the fact that stations would be maintained by the Emergency association the last two days of last week, and that they were to go to one or another of these stations and give their subscriptions for the bonds.

Marshfield, Ore., Company Helps Employes Buy Liberty Bonds.

The Coos & Curry Telephone Co., of Marshfield, Ore., of which Charles Hall is president, is assisting its employes in taking part in the Liberty Loan to the government by advancing the money to buy the bonds and allowing the employes to pay for them in installments deducted from their regular pay checks. As an additional incentive, to saving, the company will charge no interest on the money advanced to employes who complete payments in accordance with the terms set forth by the company.

The subscriptions for the bonds under this plan are being taken up very rapidly, President Hall states.

Increase in Rates Announced by Geneva (N. Y.) Telephone Co.

Announcement was made on June 5 of a general advance in rates by the Geneva Telephone Co. of Geneva, N. Y. The company which has 2,500 subscribers in Geneva has advanced the rates as follows:

Business telephones, single party lines, from $33 to $45; two-party lines, from $27 to $39; residence telephones, single party lines, $27 to $33; two-party lines, $23 to $27; four-party lines, $18 to $21.

Ohio Automatic Men Hold Meeting in Dayton.

The members of the Ohio Automatic Telephone Association held a meeting in Dayton, Ohio, on June 5, during the course of which an inspection was made of the Dayton exchange of the Ohio State Telephone Co. Suggestions were made by the visiting telephone men regarding conditions of the local plant, as to the maintenance and operation of the property.

Largest Submarine Cable in the World Just Laid.

What is said to be the largest submarine telephone cable in the world has just been laid by the New York Telephone Co. across Raritan Bay, between Ellingville, S. I., and Keansburg, N. J. The new cable is nearly five and one-half miles in length and is the longest maximum size duplex submarine cable in existence.

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

689. Explain the difference between the trunk circuit shown in Fig. 210 and that shown in Fig. 211. What is essential in all two-wire multiple circuits in order to retain the cut-off relay in an energized condition?

690. Why is the two-wire multiple trunk circuit shown in Fig. 211 not suitable for use with the differential line relay local common battery equipment? What is the function of the flow of current to the *tip* strand of cord circuits in the differential line relay common battery local equipment?

691. Describe the operation in detail of the trunk circuit shown in Fig. 212.

692. What is the function of the jumper 5 shown in the trunk circuit Fig. 212? Under what conditions may this jumper be dispensed with?

693. When are recording trunks required? Why is it possible to terminate them in jacks at both ends? How is the toll operator given the signal on the ordinary recording trunk circuit?

CHAPTER XXV. The Toll Switchboard (Continued).

694. *Operation of recording trunk.*—The operator answering a subscriber asking for "long distance" will test the multiple jacks of the outgoing recording trunks in exactly the same way as the multiple jacks of called local lines are tested to determine whether or not the circuit is engaged. As soon as a disengaged trunk is found in the multiple, the calling plug of the cord pair is inserted without ringing.

The insertion of the calling plug, Fig. 213, creates a path for flow of current over the sleeve of the plug, the sleeve of the trunk local terminal jack, and through the winding of the trunk sleeve relay, *B*. The armature of relay, *B*, operates its contact springs and closes a circuit from the positive terminal of the common battery through the relay contact springs, 1, the normally-closed relay contact, 2, the lamp, *D*, and from the lamp to the negative terminal of the common battery.

The display of the lighted lamp, *D*, apprises the toll recording operator that her attention is desired, and the insertion of the answering plug on the toll recording position opens the supply circuit to the lamp associated with the trunk and also operates the supervisory relay at the local position. The interruption of the current flow through the signal lamp, *D*, is due to

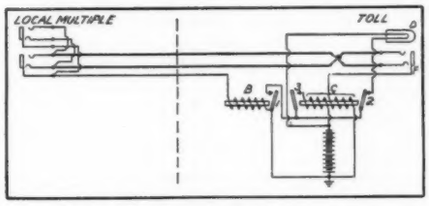


Fig. 213. Simple Recording Trunk for 3-Wire Common Battery Multiple.

the movement of the armature of the relay, *C*, which breaks the normally-closed contact at the springs, 2.

The relay, *C*, is energized by the flow of current through its winding, *G*, from the sleeve contact of the toll operator's plug, the sleeve of the jack, *F*, the winding, *G*, to the positive terminal of the common battery. The relay, *C*, also causes a locking circuit to be completed through the armature contact, 3, permitting current to flow from the positive terminal of the common battery through the relay contact, 1, of the relay, *B*, the relay contact, 3, of the relay, *C*, the locking winding of the relay, *C*, to the negative terminal of the common battery.

The insertion of the toll-recording operator's plug in the jack, *F*, therefore, causes the lamp, *D*, to be darkened, and by establishing current flow through the locking winding of the relay, *C*, insures that the trunk signal lamp will *not* be lighted again, giving a false signal, when the plug on the *toll* switchboard is withdrawn from the trunk jack before the plug on the local position is withdrawn from the local terminal jack of the trunk.

This result is assured by the fact that as long as the local plug is resting in the multiple jack of the recording trunk, there is a current flow through the winding of the relay, *B*. In other words, the circuit as arranged insures that the signal lamp on the recording position, once darkened, will not be again displayed until the connection for which it was displayed, has been removed at the local position and another subsequent connection indicating another call for "long distance" made at some one of the multiple local terminal jacks of the recording trunk.

695. *Operation of supervisory signal on local cord.*—It will be noted that the *tip* of the local trunk jack is wired to the *ring* of the trunk jack on the toll switchboard and that the *ring* of the local trunk jack is, in a similar way, wired to the *tip* of the trunk jack at the recording position. This is for the purpose of operating the supervisory relay on the local cord pair when the recording operator inserts the answering plug into the trunk jack.

By this arrangement, the current will flow from the positive terminal of the common battery through one winding of the *local* supervisory relay or resistance to the negative terminal of the battery through the winding of the *toll* cord supervisory relay. The same is true of the flow of battery from the tip of the toll switchboard cord to the local cord equipment and this condition insures the operation of both the supervisory relays involved. It is by means of this simple expedient that the local operator is advised when the toll operator answers the call.

With proper arrangements this trunk circuit may be used with any one of the standard three-wire common battery local line and cord equipments. The value of the relay resistance, however, will require to be adjusted for the local conditions that must be met. It is not suitable for use with the cord circuit combination shown in Fig. 153, which uses no relays.

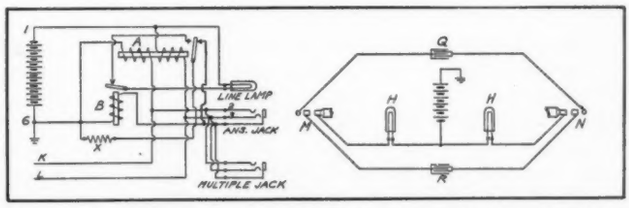


Fig. 153. Circuit Combination Requiring No Cord Circuit Relays.

696. *Simple recording trunk circuit for two-wire multiple local equipment.*—While the recording trunk circuit shown in Fig. 213 is suitable, with the proper relay resistance values, for use with any one of the standard three-wire multiple

local equipment, it requires somewhat different arrangement of the elements of the circuit to permit of its use with the two-wire multiple local equipment. One of the possible arrangements for use with the two-wire multiple local equipment is shown in Fig 214. This arrangement of

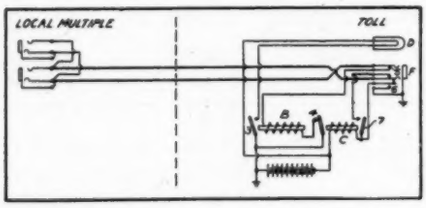


Fig. 214. Simple Recording Trunk Circuit for Two-Wire Multiple Local Equipment.

the recording trunk circuit may be employed in connection with any type of two-wire multiple local common battery equipment except the differential line reday local equipment.

The actual manipulation of this type of circuit is precisely the same as that of the trunk equipment shown in Fig 213. It is to be noted also, that the trunk shown in Fig. 213 requires three wires per circuit between the toll and the local switchboards, while the circuit shown in Fig. 214 requires only two wires per trunk.

607. *Operation of circuit.* In the circuit shown in Fig. 214, the insertion of the calling plug of the local cord pair in the multiple jack on the local section completes the circuit for the flow of current from the positive terminal of the common battery through the normally-closed contact springs, 4, of the relay, *C*, the winding of the relay, *B*, the normally-closed tip contact spring, 5, of the jack, *F*, one side of the trunk circuit, the sleeve spring of the multiple jack at the local section, to the negative terminal of the common battery through the sleeve relay of the cord pair.

The resulting energization of the relay, *B*, closes the circuit through the signal lamp, *D*, at the relay contact springs, 3. When the recording operator inserts the answering plug into the trunk jack, *F*, the flow of current through the relay, *B*, is interrupted at the normally-closed jack spring contact, 5. At the same time a circuit for the flow of current through the winding of the relay, *C*, is completed at the normally-open extra jack contact springs, 6, and the two armatures of the relay, *C*, are attracted, opening at the contact, 4, the battery circuit to the signal relay, B, and closing the circuit from the tip side of the trunk at the local section over one side of the trunk, through the winding of the relay, *C*, to the negative terminal of the common battery.

As long as the cord remains in the trunk multiple jack, the relay, *C*, will be energized by the flow of current from the tip strand of the local cord, one side of the trunk circuit, the normally-open contact, 7, the winding of the relay, *C*, to the negative terminal of the common battery.

The continued energization of the relay, *C*, by retaining the circuit of relay, *B*, at 4 open, prevents the energization of the relay, *B*, so long as the local cord remains in the trunk multiple. In other words, just as is the case in the circuit shown in Fig. 213, the removal of the toll-recording operator's plug from the jack, *F*, will not cause the signal, *D*, to be prematurely displayed, giving the toll operator a false signal. The signal cannot be displayed until the local end of the connection has been removed and a subsequent connection established.

[EDITOR'S NOTE: In last week's installment a circuit was presented as Fig. 153 which very obviously was incorrect, as cord circuit relays were indicated. The correct cord circuit is published with this installment.]

(To be Continued.)

Much Work Done by Traffic Committee of U. S. I. T. A.

What was considered to be one of the most successful meetings of the traffic committee of the United States Independent Telephone Association was held at Grand Rapids, Mich., June 5, 6 and 7.

Those of the traffic committee present at the meeting were:

Chairman A. J. Shands, St. Louis, Mo.; H. E. Davis, Kansas City, Mo.; Frank V. Newman, Grand Rapids, Mich.; G. K. Gann, Lincoln, Neb.; C. E. Smith, Grand Rapids; W. I. Howard, St. Paul, Minn.; Martin Umbach, Ft. Wayne, Ind., and Secretary W. S. Vivian, of Chicago.

There were also present: G. R. Johnston, of Columbus, Ohio, chairman of the service committee; E. B. Fisher, chairman of the board of directors of the United States Independent Telephone Association, and Messrs. Dudley, of the Kellogg Switchboard & Supply Co., and Mooney, of the Automatic Electric Co.; C. E. Tarte, general manager, Citizens Telephone Co., and Mr. Hutchins, traffic superintendent, United Home Telephone Co., Muskegon, Mich. Only two members of the traffic committee were absent.

After the meeting had been opened by Chairman Shands, E. B. Fisher was called upon for a talk. Mr. Fisher responded by directing attention to the fact that on that morning there were 16,174 more telephones in Grand Rapids than the Bell company had in all Michigan 20 years earlier. He related something of the history of Grand Rapids, and assured the visitors that they were most welcome and hoped they would have such a good time that they would come again.

One of the most important matters that received the attention of the committee was the advisability of preparing and publishing a correspondence course for the operators on "Long Distance Operating."

After the subject was introduced, George K. Gann, of Lincoln, Neb., gave an account of his experience with the correspondence course throughout the territory of the Lincoln Telephone & Telegraph Co. Among other things, Mr. Gann stated that they had made an actual cash expenditure of considerably less than $1,000, and estimated that the efficiency and capacity of the employes and plant would be increased to such an extent that it would result in a saving of many thousands of dollars this year.

Every one present actively participated in the discussion of this subject. As its possibilities developed the committee members were convinced that if such a course could be prepared and published and the work financed, it would be a service which would be well worth while, and one that would result in many benefits to the companies throughout the Independent telephone field.

The motion was finally put and unanimously carried, that a sub-committee be appointed to work out such a course. The members of this committee are Messrs. Newman, Davis, Gann, and Vivian.

This sub-committee is to meet in Grand Rapids the week of June 18 to proceed with this work. It is hoped that the entire work can be accomplished complete and that the approval of the service committee can be secured in ample time to be ready to offer the course to the Independent telephone companies throughout the field on September 1.

Action was taken by the committee authorizing the publication, at the earliest convenient time, of a peg-count bulletin. This has already been completed, and all that is necessary before publishing it is to secure the approval of the service committee.

A committee consisting of Messrs. Shands, Davis, and Gann was appointed to prepare a bulletin on "Equating Traffic."

A committee consisting of Messrs. Shands, Howard, and Smith was appointed to prepare a bulletin on "Tributary Traffic."

Another committee consisting of Messrs. Davis, Doolittle, and Howard was appointed to prepare a set of operating instructions for magneto, common battery and multi-office operating.

During the three days the committee was in session the members were splendidly entertained, the Citizens Telephone Co. and the Michigan Independent Telephone & Traffic Association vying with each other to see that the visitors had a good time. On Tuesday noon, the traffic association entertained the visitors and

the ladies at a luncheon at the Pantlin Hotel. Tuesday evening they were entertained by the Citizens Telephone Co. with a sight-seeing trip throughout the city and a dinner and theatre party. Wednesday evening the traffic association entertained with an automobile ride and a dinner party at Macatawa Park.

The next meeting of the committee will be held in July in Chicago.

Program for North Dakota Telephone Convention.

The North Dakota Independent Telephone Association has announced the program for its eleventh annual convention, to be held in Minot, N. D., on June 21 and 22, as follows:

THURSDAY MORNING SESSION.

Address of welcome, by W. S. Shaw, president of city commission.

Response, by Hon. Judge Carmody, Hillsboro.

Singing of "America."

President's address, H. W. Wilson, New Rockford.

Secretary's report, H. A. Livermore, Fargo.

Reports of standing committees.

Appointment of committees.

Receiving of questions for question box.

Adjournment.

THURSDAY AFTERNOON SESSION.

"Commission Regulation," by Representative of North Dakota Railroad Commission.

"Telephone Companies, War and the Signal Corps," by E. C. Kast, executive agent, Minnesota Independent Telephone Association.

"A Layman's Impression of the Telephone," by Rev. Cecil Leslie Clifford, Minot.

THURSDAY EVENING.

Entertainment.

FRIDAY MORNING SESSION.

"Telephone Taxation," by F. M. Packard, chairman of the North Dakota Tax Commission.

"Telephone Legislation," by Nels Magnuson, Souris.

Question box conducted by A. J. McInnis, Dazey.

FRIDAY AFTERNOON SESSION.

"Protection from Power Lines," H. L. Reade, state fire marshal.

"Retraction of Dingus," by I. Speakup, New York City.

Report of committees.

Election of officers.

Adjournment.

New Directory of Newton, Iowa, Company Shows Increase.

The 1917 directory of the Jasper County Telephone Co., of Newton, Iowa, which has just been issued, contains a total of 2,400 telephone numbers, an increase of 150 subscribers over the previous year.

You Need the U. S. Indpenedent Telephone Association!

By E. C. Blomeyer

For a long time the handicap of Independent telephony as a whole was that it was composed of a large number of separate units, or companies, with different practices and standards and sometimes different aims and ideals—without the influence of concerted action.

Lately there have been demonstrated to us these important facts: That the Independent telephone companies of this country have, collectively, a tremendous influence and strength; that this strength can be exerted only through such an organization as the United States Independent Telephone Association; and that the strength and influence of that association for the betterment and protection of Independent telephony will grow in exact ratio to the growth of its membership.

Your company, and my company, working individually, will make no great impression, even though we may be aiming at exactly the same thing—what we say is simply a matter of our personal opinion and will be taken as such. But when your company, and my company, and several hundred other companies, say the same thing through our association, it will be taken as the duly considered official utterance of an organization that is backed by the combined influence and strength of us all—and it will be heard with a great deal of respect.

It is possible to focus even the mildest rays of the sun through a burning glass, and their concentrated heat will cause a blaze. So the national association focuses the strength, the power and the influence of its members, concentrating it directly and definitely upon the objects to be attained. Singly, none of us could produce this result; working in concert even, but as individual companies, we could not produce it. There must be an organization, responsible as such, for its acts, both to its member units and to those with whom it deals for them. This is one of the reasons—and a big reason—for the existence of a national Independent telephone association.

If the United States Independent Telephone Association offered its member companies no other benefit than the proper wielding of this combined influence and strength for the betterment, upbuilding and protection of Independent telephony in this country, it would be worth, to every Independent telephone company in the United States, every cent that it might cost them and all the work they put into it.

But the association offers other valuable services. Representing you as your agent in the nation's capital—and the Interstate Commerce Commission requires that you have such an agent—is a service quoted by others who make this a business, at from $10 to $25 a year. Representation of the Independent telephone companies by the association, in national legislative matters, has within the past two years saved the Independent companies thousands of dollars annually. The bulletins of information and the news of value to telephone companies, sent out by the association to its members, have been of great value. Special information and services of value are given member companies.

E. C. Blomeyer.

The work of the officers of the national association with state associations, in conventions, operator's schools and similar activities, has been of great benefit to the Independent telephone industry. Nor does the national association conflict in any way with your state association. The two cover different fields—the one intensively cultivating the state, the other concentrating on national affairs that could not possibly be handled by organizations limited by state boundaries. Membership in the state association alone is not sufficient if you expect to do your full duty to yourself and to the industry at large.

There is but one answer—send $5 and your application to Secretary Vivian today. Put your influence where it will do some good in national affairs. Line up with the more than 700 Independent telephone companies already in the organization. It has been a good thing for them and it will be a good thing for you.

Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision Over Telephone Companies—Decisions of Courts in Matters of Interest to Public Utilities and Actions of City Councils Relative to Franchises, Rates and Service

Assessment Basis of Operation Illegal in South Dakota.

The Indian Creek Telephone Co., of Ardmore, S. D., has been ordered by the South Dakota Railroad Commission, in a ruling handed down June 7, to establish and file with the commission a schedule of rates, to enter into a written contract with the Ardmore Telephone Co., for switching services, to discontinue its practice of operating on an assessment basis and requiring subscribers to become stockholders, and to take over lines and instruments now owned by individual subscribers or stockholders.

This ruling was rendered by the commission as a result of an investigation into the Indian Creek company's method of transacting its telephone business, and its failure to file its schedule of rates and to comply with the state laws governing the conduct of the telephone business.

The "Upper" Indian Creek Telephone Co., as the company is commonly designated, operates a strictly rural line, connecting with the exchange of the Ardmore Telephone Co., at Ardmore. It is owned and operated by farmers and ranchers and was originally constructed for their own convenience. It has never adopted a schedule of telephone rates and operates upon an assessment basis. It has a telephone line of approximately 35 miles, about 20 of which may be called the main line and the balance branch lines.

The company considers that the original construction cost of a mile of line is $45. When a person living in that locality desires telephone service and is willing to build his own line, he is permitted to be connected. He is presumed either to build a mile of line or to cover into the treasury enough money, together with the cost of the line constructed, to make an equivalent of $45. The balance is, of course, used to defray such expenses as may arise.

Each stockholder is supposed to maintain his own line, and if at the end of the year there is not enough money on hand to pay the expenses, an assessment is made on the stockholders. The messages are switched at the exchange of the Ardmore Telephone Co., at 25 cents per month for each instrument.

The commission finds that there is no attempt on the part of the officers or stockholders of this company to evade the law, and they have been operating in extreme indifference to the provisions of any statute that has been passed by the legislature, not through any wanton disregard of the provisions of the statute, but simply because they believed the law did not apply to them.

The civil code of South Dakota provides that "everyone who offers to the public to carry persons, property or messages is a common carrier of whatever he thus offers to carry." Thus the Indian Creek Telephone Co. is a common carrier and comes under the jurisdiction of the state railroad commission. Under the statutes, it is unlawful for the company to operate on an assessment basis, and also to require intending subscribers to furnish their equipment and construct their own line.

The rates of this company, the commission holds, should be high enough to cover all reasonable operating expenses and set aside a depreciation reserve and all of the equipment and instruments should be owned by the company. All extensions to accommodate intending subscribers should be made by the company, and it should not be required as a condition precedent to the obtaining of telephone service with it that intending subscribers become stockholders and contribute an amount equivalent to $45 to the treasury of the company. Order No. 2213.

Farmers Decide Competitive System at Low Rates Unprofitable.

The farmers in the vicinity of Sterling, Neb., who organized a corporation to enter the telephone business in Johnson county, have voted to dissolve their association, and they will not embark upon the enterprise. The corporation was formed two years ago for the purpose of building exchanges in competition with the Lincoln Telephone & Telegraph Co., in Johnson county.

Prior to 1912 Johnson county was served by two companies, the Bell and an organization of home capital. The property and franchises of both were purchased five years ago by the Lincoln company. When it sought to readjust the rate situation, which had become badly muddled by the slashing done at competitive points, it ran up against the fact that the various solicitors had so impregnated the minds of the farmers with the belief that a $1.50 rate for rural lines, with free connections to one or more towns, was robbery, that its efforts to secure a fair rate were bitterly opposed.

At Sterling the farmers met and organized, and made preliminary preparations for financing a $25,000 incorporation. The state railway commission, failing to dissuade the incorporators that in so small a territory two systems could not exist and make money, issued an order giving it the right to go ahead. This right was contested by the Lincoln company, which supported one member of the commission in his stand that the law giving that body general control of public utilities empowered it to refuse to permit competitive systems where the existing system was giving proper service at proper rates. It appealed to the supreme court. This appeal has now been dismissed.

The high prices of material, a better knowledge of the costs of the business and a conviction that the rate was not robbery after all induced the farmers to decide not to invest their money in the telephone industry.

Uniform Rates for Stockholders and Non-Stockholders.

The Nebraska State Railway Commission has ordered the Glenwood Telephone Co. to discontinue its policy of making one rate for subscribers who are stockholders and a higher rate for those who are not. This order followed a consultation with officers of the company, who agreed to make a uniform rate for service on each exchange.

Secretary Bushaw said that recently some of the stockholders had been doing a little figuring, and had discovered that computing the interest on investment and other elements, they found they were actually paying more for their service than they were charging subscribers who did not own stock. The company has been run on the policy of charging non-stockholding subscribers what were believed to be proper rates, and then distribute whatever dividends might be possible through operation to stockholding subscribers in the shape of lower rates. No dividends have ever been paid by the company, and under the plan adopted many stockholders secured their instruments for as low as 60 or 70 cents a month.

The company has a peculiar organization. While not technically a holding company, it practically is one for 12 exchange districts. It is governed by a body of directors made up of a representative from each district. Each of these districts is, in turn, governed by a board of its own, and this board runs the affairs of that district as it pleases, makes its rates, its own division of revenues on the line outlined and its rules of service. Thus the rate schedules on different exchanges represent the respective managerial abilities displayed in each. Each subscriber pays 15 cents a year for the

support of the holding company, and the authority of the executives of this company, while not made very clear to the commission, appears to be limited to requiring managers of the various exchanges to properly attend to their business.

The company operates in the counties of Webster and Adams in a portion of that section of the state dominated by the Lincoln company. Its ownership is represented by stock issued by the company, and all subscribers have free service on all exchanges. The fact that the same service is given each subscriber, but that the rates differ on the exchanges, has challenged the attention of the commission, but it is reluctant to hunt for rate controversies where no complaints are made, because its time is fully occupied.

Testimony Concluded in New Jersey Rate Investigation.

The testimony in the investigation by the New Jersey Public Utility Commission into the rates, charges and practices of the New York Telephone Co. in the state of New Jersey, which was begun several years ago, has been completed and the commission has fixed June 21, at Newark, as the date for argument. The evidence indicated that the company was receiving more than 8 per cent. return on its investment above the fixed charges set by the commission for corporations in New Jersey and by the New York Public Service Commission.

The testimony was of a most voluminous character, and followed an investigation into the company's books by the commission's expert, John P. Petty, and an analysis of it on behalf of the state by Dugald C. Jackson, of Harvard University. Testimony in opposition was presented by the company, although it is understood it acknowledged practically that its receipts were in excess of the 8 per cent. standard.

Because of the enormous drain upon the resources of the Bell company, the New York Telephone Co., through Counsel Robert V. Marye, asked the commission to suspend temporarily the putting into effect of any rules or regulations respecting rate changes. The commission reserved its decision in the matter.

On June 11 the commission began an investigation into the rates charged by the Delaware & Atlantic (Bell) Telephone & Telegraph Co., which operates in the southern section of the state.

Rate Increase Filed for Franklin County, Ohio.

The Franklin County Telephone Co., which operates in Franklin county, Ohio, outside of Columbus, has filed with the state public utilities commission a new schedule of rates, to become effective July 1. The schedule provides for a net increase of 25 cents per month over the present rates if payment is made within the discount period.

Service will be billed quarterly in advance as follows: Individual business, $7.50; individual residence, $4.50; rural telephones, $5.25, subject to discount of 75 cents if paid at the office of the company or agency of the company during the first month of the quarter.

The schedule also provides for party line service for both business and residence telephones, the net charge for which will be the same as the present business and residence rates, as follows: Party line, business, $6.75; party line, residence, $3.75; subject to the same discount.

The company's plan is to discontinue its policy of having bills presented by local employes and special collectors and through the discount give the subscribers the benefit of the saving thus made. Beginning with the July 1st quarter, telephone rental bills will be mailed direct to the patrons.

Governor of New York Vetoes Baxter Telephone Bill.

Governor Whitman, of New York, on June 8, vetoed the Baxter telephone bill, which was fought by Mayor Mitchel, of New York City, on the ground that it would prevent any further reduction of rates in New York City, and impose the burden of unprofitable up-state country district telephone lines on New York City subscribers.

This bill provided that in fixing a new telephone rate the public service commission must take into consideration a reasonable average return on all of the property of the company in the state, and not merely in the locality affected. The governor's memorandum on the bill reads:

"A great deal was said at a hearing and in briefs submitted to me in regard to the proper rule to be adopted by the public service commission in fixing the rates in a specific locality, such as the city of New York; that is, the question arises as to whether, in fixing the rates in the city of New York, the commission should consider the value of all of the property of the telephone company throughout the state. Under the existing statute the commission may apply the rule sought to be established by this amendment, and if it wrongfully refuses to do so, the courts can require it to apply a proper rule.

It seems to me that this is a question which the legislature should leave to the sound discretion of the public service commission. A corporation is protected by the provisions of the constitution of the United States, in that its rates cannot be so reduced that it fails to receive a reasonable return on the value of its property, and, as I have said, the question of the rule to be applied should be left to the commission, and the courts and not be prescribed by statute. For these reasons the bill is disapproved."

"The telephone monopoly," the New York World states, "owns up-state numerous one-time competing companies, which it took over in order to have the field to itself. Many of these companies are unprofitable. Were the state made the unit of valuation, the losses from up-state properties would have to be taken into consideration in the establishment of rates in territory where the company's earnings are large, as in New York City."

Questions put by Governor Whitman at a hearing on the Baxter bill revealed the fact that the secret purpose of the bill quietly put through the legislature was to prevent any reduction in telephone rates in New York City. Attorneys for the telephone company admitted they anticipated such a fight in 1918, when their present rate agreement with the public service commission expires.

Four-Party Rate Ordered in Salem (Mass.) District.

The Massachusetts Public Service Commission has ordered the New England Telephone & Telegraph Co. to establish four-party line service in the Salem district at a rate of $27 per year, covering the exchanges in Salem, Beverly, Danvers, Peabody and Marblehead.

The case was taken up by the commission on its own motion as the result of complaints made to the telephone and telegraph department. These complaints arose on account of the proposed complete discontinuance of a so-called "obsolete" six-party unlimited residence service which, until 1911, had been open to all subscribers in the district.

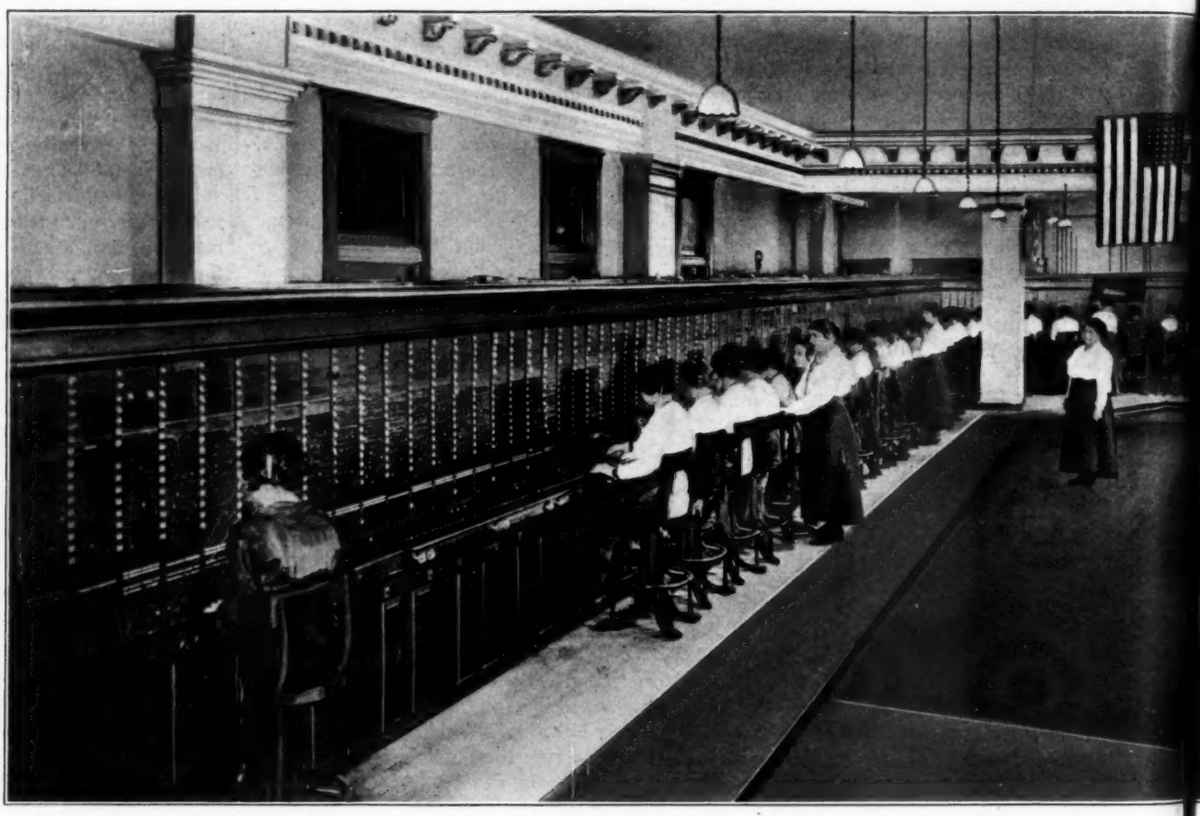
Up to that time the company's schedule offered a one-party rate of $42 per year, a two-party rate of $33 and a six-party rate of $25 for unlimited residence service throughout this district, in addition to the several grades of local service confined to the territory of a single exchange.

Since 1911, when the six-party rate was declared obsolete, the company has accepted no new contracts on this basis, but has allowed existing subscribers having such contracts to retain this service until such time as they might agree voluntarily to accept a different arrangement.

In July, 1916, the company notified the subscribers still using the six-party service that by December 1, 1916, it would be necessary for them to change to some other grade. If they desired to retain district service, the next available rate was the two-party at $33, an increase of $8 per station per year. To many subscribers this increase appeared unreasonable and at the suggestion of the board, the company agreed to postpone the change pending an investigation.

At the hearing, the company contended that the operating troubles which are incident to multi-party line service are

Eighteen Kellogg Sections



Ohio State Telephone Company, Cleveland. Business as Usual—at

A switchboard thirteen years in serv
bigger load, with fewer operators, and, aft
modern service possible only with the Ke

An interesting fact in this exchange,
the reliability of each piece of apparatus.

The relay covers—almost never remov

WITH KELLOGG,

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

nstalled Thirteen Years Ago

Largest Switchboard in the World—18,000 Lines Ultimate Capacity

e, today in splendid condition, carrying a recent rehabilitation, giving the improved gg Instantaneous Recall Switchboard.

d common to all Kellogg installations, is

—prove that, as with every other part,

SE IS THE TEST.

disproportionately increased when it is necessary to trunk calls either to or from such lines, as is the case where such service is given in a district made up of several local exchanges, and that the presence of such lines is unfair to other subscribers, making it impossible for the company to maintain the general standard of service to which the community is entitled.

The question is similar to the case considered by the board in 1914, upon petition of the United Improvement Association, of Boston. In that case the company had declared obsolete four-party and six-party suburban residence service in the metropolitan district. The board ordered the company to give the four-party service a further trial, but concluded that six-party line service is entirely unsuited to a multi-exchange district like the metropolitan suburban. As a result of this decision, four-party unlimited surburban residence service has since been maintained in the metropolitan district.

In the three years which have elapsed since the decision, the company has not availed itself of the opportunity left open for a reconsideration, nor has it intimated so far as the board is aware that further experience has demonstrated that this grade of service is unduly burdensome to the general service. The trial has shown, on the other hand, that there is a real demand for four-party line service within the metropolitan district. On December 31, 1916, 10,604 subscribers were using this form of service.

The commission, therefore, holds that the precedent established in 1914, within the metropolitan district, may reasonably be followed in the smaller and less complex Salem district, and that while the company ought not to be called upon to continue the obsolete six-party service, it should be required to establish and maintain within this district a four-party service at a relatively low rate. By analogy, this rate ought to be $27 per year. In the metropolitan district the one-party suburban residence rate is $45 per year; the two-party rate is $36 and the four-party rate is $30. The one-party and the two-party rates are in each case $3 higher than the corresponding rate in force within the district in question, and upon this basis a four-party rate in the Salem district becomes and is fixed for the present at $27.

The commission points out that until it has had opportunity to make a complete study of the telephone rate situation within the state, it cannot pass upon the reasonableness of the rate schedule within the Salem district. In other similar districts throughout the state no six-party service at present exists, and in the absence of complaint or evidence of popular demand, the commission has not thought it necessary to provide for the extension of four-party service to such districts, but has left this question to be taken up when the demand appears. The Salem district four-party rate must take effect by August 5.

Service Accepted by Lower Court Over the Telephone.

For what is said to be the first time in the history of Kentucky jurisprudence, service has been accepted by a lower court from a higher court, when the long distance telephone was the medium of communication. The incident was staged in Louisville and Frankfort, the state capital, on May 29, and related to a contest between a father and a maternal grandmother and an aunt for possession of a thirteen-year-old girl. In itself, the case was not of notable importance.

On the morning of Monday, May 28, according to an order entered in the branch of the circuit court at Louisville, over which Judge Thomas R. Gordon presides, the girl had been turned over to her father at a Louisville passenger station just as the father prepared to board the train. The attorney making the delivery, however, had no sooner procured a receipt for the child than the father was served with a warrant issued by the local juvenile court charging that the child was without proper guardianship. The child was taken away from him and held in the detention home for a hearing of the case on the following Friday, June 1.

Immediately the father instituted habeas corpus proceedings, whereupon the attorneys for the maternal grandmother and aunt in the case hied them to the state capital and obtained a writ of prohibition from the court of appeals of Kentucky. The father's habeas corpus plea was being heard when Judge Gordon, trying the case, was advised by his clerk that a deputy in the office of the court of appeals was on the telephone and desired to inform him of the writ of prohibition granted in the case. Judge Gordon went to the telephone and informed the deputy that he would not accept service over the telephone from a deputy in the higher court's offices.

When the situation was reported to Chief Justice W. E. Settle, at Frankfort, however, the chief justice immediately put in a call for Judge Gordon. The latter responded and, when he fully satisfied himself that he had recognized Justice Settle's voice, agreed that he would postpone hearing of the case until after the juvenile court had passed on the charges of the grandmother and aunt. When this was written the issues in the proceeding had not yet been disposed of.

Non-Suit Granted in Damage Suit for Delayed Call.

A non-suit has been granted in the case of the Standard Iron Works, at Spartanburg, S. C., against the Southern Bell Telephone & Telegraph Co., by the federal court in Anderson, S. C., Judge Johnson being on the bench. This ends one of the most unique cases in the history of the federal court in that state.

The suit came as a result of a delayed call in December, 1916, when a fire occurred at the plant of the Standard Iron Works. When the fire broke out, a call was put in to the central office, but it is alleged that the call was delayed, and the fire alarm necessarily was also delayed. The company claimed damages in the sum of $6 000 for the delay, alleging that the telephone company was negligent in handling the call where its property was involved.

At the time of the incident and when the suit was filed, considerable interest was aroused in the case.

The Iron company was represented by J. C. Otts, of Spartanburg, in the trial and the telephone company was represented by Bomar & Osborne, also of Spartanburg.

Summary of State Commission Hearings and Rulings.

CALIFORNIA.

June 1: J. W. Cain and Albert Cain, owners of the Novat Light & Power Co., authorized by the commission to sell to the Novato Utilities Co. their electric telephone and water utility properties in Novato and surrounding territory in Marin county for $20,000 stock of the buying corporation. The new concern is capitalized at $50,000 and $1,430 of stock has already been issued for the purposes of incorporation.

ILLINOIS.

June 12: Hearing at Springfield on the application of the Coon Brothers Telephone Co., for authority to increase its rates at its Saybrook exchange. Objections filed by Saybrook Farmers Mutual Telephone Association and a committee of business men of Saybrook. Case 4871.

June 12: Hearing at Springfield on the application of the Sparta Telephone Co., for authority to change its rates at Sparta. Case 5320.

June 12: Hearing at Springfield on the application of the Farmers Mutual Telephone Co., for authority to increase rates in Calhoun and Pike counties. Answer of city of Pittsfield filed. Case 6335.

June 12: Hearing at Springfield on the application of the Fisher (Ill.) Telephone Co., for authority to issue its common stock in the amount of $1,000. Case 6809.

June 12: Hearing at Springfield on the application of the Fisher (Ill.) Telephone Co., for an order authorizing the issue of its notes in the aggregate amount of $7,000. Case 6810.

June 13: Hearing at Springfield in the matter of the application of the Mt. Auburn Telephone Co., for authority to discontinue free service and put into effect a toll charge of 10 cents from Mt. Auburn to Blue Mound. Case 6384.

June 13: Hearing at Springfield on the application for approval of schedule of rates No. 1 of the Abingdon Home Telephone Co., for rates at London Mills. Case 6423.

June 13: Hearing at Springfield on the application of the Olga Independent Telephone Co., for a certificate of con-

venience and necessity to extend a toll line from its Olga exchange to Macedonia. Case 6448.

June 14: Hearing at Springfield on the application of the Cass County Telephone Co., for authority to increase rates in Virginia and vicinity. Case 6480.

June 14: Hearing at Springfield in the case of the Allen Switchboard Association of the Farmers League and Community Telephone Association vs. the Murphysboro Telephone Co. (assign of the Ohio & Mississippi Valley Telephone Co.) on complaint that the Murphysboro Telephone Co. abrogated contract between the complainant and the Ohio & Mississippi Valley Telephone Co., dated May 1, 1909, covering their exchange in Marion to points in Williamson county. Case 6727.

June 15: Hearing at Springfield on application for approval of rate schedule No. 1 of the Christian County Telephone Co., covering rates for telephone service at Taylorville, Pana, Morrisonville, Edinburgh, Stonington, Owaneco and Kincaid. Objections filed by subscribers of the company at Taylorville and Morrisonville. Case 6688.

MASSACHUSETTS.

June: New England Telephone & Telegraph Co. ordered to establish four-party line service in the Salem district at a rate of $27 per year, covering the exchanges in Salem, Beverly, Danvers Peabody and Marblehead.

MINNESOTA.

June 8: The commission authorized the Tri-State Telephone & Telegraph Co., of St. Paul, to purchase from W. M. James, doing business as the New Brighton Telephone Co., his local exchange and rural lines at New Brighton, with some 34 subscribers, for $700.

June 8: Sale of the telephone properties and rural lines of the Turtle Lake Telephone Co., serving 21 subscribers in the vicinity of Turtle Lake, to the Tri-State Telephone & Telegraph Co., of St. Paul, approved by commission. The price agreed upon by the parties interested is $1,800.

June 18: Hearing at St. Paul in the matter of the petition of Henry Sullwold requiring the Four Lakes Rural Telephone Co. to make a telephone connection between the petitioner's house and the rural telephone company's lines.

June 21: Hearing at Hutchinson on the application of the Hutchinson Telephone Co., for permission to increase its rates as follows: Individual line business, from $2 to $2.75; two-party line business, $1.50 to $2.25; individual line residence, from $1.25 to $1.75; two-party line residence, from $1 to $1.50.

The company also asks permission to establish a four-party line residence rate at $1.25 a month, and to charge 50 cents, respectively, for business and residence extension wall telephones. Where the rate is less than $2.25, an extra charge of 25 cents is to be made for desk telephones.

MISSOURI.

July 7: Hearing on the question of allowing an increase in rates for both business and residence telephones by the Southwestern Bell Telephone Co. at Springfield, set for this date, has been indefinitely postponed.

NEBRASKA.

June 4: Application of Farmers' Home Telephone Co., of Naper, to increase switching charges from $3 to $4 a year on 17 subscribers who use the company's poles but own their own lines; granted.

June 4: Tri-County Telephone Co., of Stapleton, ordered to establish switching charge of 10 cents for day calls and 25 cents for night calls and to cancel present rate of 25 cents and 50 cents to non-subscribers, on the ground that present charges are excessive. The company operates in the ranch country where houses are miles apart. Many ranchmen have had to buy their own instruments. These they attach to farm lines that are nothing more than wire strung along on fence posts, and the exchange does the switching. The company insisted that it cost too much to make the collections, and the commission directed it to require deposits from ranchmen.

June 5: Complaint filed by C. A. Callender that Tri-County Telephone Co., at Stapleton, insists on charging the same rate for night toll calls from Stapleton to North Platte as for day calls. Commission ordered that a showing be made by company as to toll line investment and earnings.

June 5: Complaint filed by Burlington railroad against Lincoln Telephone & Telegraph Co., that it is attempting to raise the service charge in the company's depot at Wann from $1.50 a month for grounded service to $2 a month for metallic service, without authority. The records of the commission show that metallic service rates were established at Ashland, out of which the line to Wann runs, but that the application of schedule was confined to the city limits. Company ordered to make showing of facts.

June 5: Complaint of Lincoln Telephone & Telegraph Co. that Aurora Electric Co. is erecting transmission lines without proper authority, dismissed for want of prosecution. The matter has been in the courts for some time, the transmission lines paralleling, under the first plans made, those of the telephone company. The routing having been changed, the company dropped the matter.

June 6: Application of Fairfield Telephone Co., for permission to reduce time on outgoing toll calls to Clay Center, Edgar and Glenville from five minutes to three, to correspond with incoming time limit. It appearing to the commission that this is in line with the policy of the commission to standardize toll service, application granted.

June 8: Application of Wyoming & Nebraska Telephone Co., for permission to limit exchange areas in incorporated towns to the limits thereof and in unincorporated towns to within half a mile.

June 8: Complaint of Citizens Telephone Co., of Minatare, that transmission lines of Inter-Mountain Electric & Power Co. interfere with its service.

June 8: Complaint filed by Farmers Grain Co., of Rohrs, that Auburn Telephone Co. refuses to furnish it with private line although it has offered to furnish wire. It appearing to the commission that the grain company now has service over a party line, and that the offer is not sufficiently compensatory, complainant is ordered to submit counter proposition of company.

NEW JERSEY.

June 11: Investigation begun by the commission into the rates charged by the Delaware & Atlantic (Bell) Telephone & Telegraph Co., which operates in the southern section of the state.

June 21: Date fixed for argument in the investigation by the commission of the rates, charges and practices of the New York Telephone Co. in the state of New Jersey, the testimony having been concluded several weeks ago.

NORTH DAKOTA.

June 6: Petition filed by Mandan business men asking the commission to order the North Dakota Independent Telephone Co. to install a new cable over the Missouri to care for increasing traffic between Mandan and Bismarck and thus enable the company to reduce the present toll charge of 15 cents to 10.

OHIO.

June: New schedule of increased rates filed by Ohio State Telephone Co., for Youngstown.

June 2: New schedule of rates filed by the Franklin County Telephone Co., for service in Franklin county outside of Columbus. The new schedule provides for a net increase of 25 cents per month of the present rates if payment is made within the discount period.

PENNSYLVANIA.

June 7: Hearing at which the Keystone Telephone Co. presented an amended contract for approval for the lease by the Philadelphia Electric Co. of the unused portion of its conduits.

SOUTH DAKOTA.

June 7: The commission ordered the Indian Creek Telephone Co., of Ardmore, to establish and file with the commission a schedule of rates, to enter into a written contract with the Ardmore Telephone Co., for switching services, to discontinue its practice of operating on an assessment basis and requiring subscribers to become stockholders, and to take over lines and instruments owned by individual subscribers or stockholders. Order No. 2213.

WISCONSIN.

May 11: Ashland Home Telephone Co. and Wisconsin Telephone Co. ordered to establish physical connection for toll service at Ashland.

June 4: Hearing in re alleged refusal by Dane County Rural Telephone Co. to extend service to P. J. L'Anglais, et al. U-1090.

June 5: Hearing in the village hall at Bancroft in the case of F. R. Springer et al. vs. Bancroft Telephone Co., Union Telephone Co. and Almond Telephone Co., in regard to toll rates. U-1086.

June 7: Hearing in re application of Pacific & Wyocena Farmers Co-operative Telephone Co., for authority to increase rates. U-1088.

June 8: Hearing in re application of the Waunakee Telephone Co., for authority to increase rates. U-1089.

June 12: Hearing in re application of the Chippewa County Telephone Co., for authority to increase rates. U-1081.

June 13: Hearing in re application of Crivitz Rural Telephone Co., for authority to increase rates. U-1093.

June 14: Hearing in the case of Armenia Telephone Co. vs. Necedah Telephone Exchange, in regard to switching charges. U-1096.

June 14: Hearing at the village hall in Muscoda in the case of Muscoda Mutual Telephone Co. vs. East Sand Prairie Telephone Co., in regard to violation of law. U-1085.

June 15: Hearing on the application of Ripon United Telephone Co., for authority to increase its rates. U-1095.

June 19: Hearing at Elkhorn in re-alleged refusal by the State Long Distance Telephone Co. to extend services to Rollin H. Fiske. U-1091.

June 19: Hearing in re application of Lafayette County Telephone Co., of Gratiot, for authority to increase its rates at Darlington. U-1097.

June 22: Hearing in re application of the Mayville Rural Telephone Co., for authority to increase rates. U-1099.

A Good Business

The Albion Decision—Some Comments

By J. C. Kelsey

Albion, Neb., is a typical locality. It lies in the fertile valley of the Platt River and represents what a Dickens might describe as real Americanism.

It is in such a locality that people really live and flourish, for there is nothing natural in a great city. There few men survive the conflict and when their estates are settled the family finds that father was but a few jumps ahead of the sheriff.

Lying out there in Nebraska, Albion reveals some facts interesting to all telephone men.

Two men, M. G. Needham and T. F. Martin, formed a partnership to go into the telephone business. That was back in 1899, when the thought of universal telephone service was yet to be born, and where only large communities were deemed able to pay telephone rates which would pay expenses and license charges.

This little telephone exchange, like all others, grew rapidly, and for 16 years each of the partners drew $100 per month and 6 per cent. interest on the money invested.

After many years of activity, Mr. Martin withdrew. He sold a half interest in the business for $25,000, in which he and his partner had invested but $10,629.

Their case is not different from the farmer and his wife who took up 320 acres of land at $1.25 per acre, and put their life-blood and surplus back into it until the bank considered them worth $50,000.

These telephone men, finding profitable years, did not follow the large city example and live riotously. They did the sensible thing of putting the profits back into the business and watching them grow.

Naturally there comes a time when men want to step out and enjoy themselves a little while before they die. Not all men are like the stage driver who, after 30 years of continuous service, was given a vacation—and then spent it riding by the side of the substitute driver. They like to go to Southern California and live with Nature a little while.

So men were found who bought the property and undertook to carry on the business.

But there is a great difference between the condition of the men who have patiently put $50,000 into the property and the men who suddenly put the money into it as purchasers. They possibly have to borrow the money and have to capitalize the property, so shares of stock can be issued and sold or used as collateral.

But the buyers of the Albion property ran against the state railway commission which, while readily recognizing that the property was worth $50,000, would not let them issue more than $25,000 of stock because the other $25,000 has been paid for out of surplus earnings.

Surely, thrift never received a stronger blow between the eyes than the Albion people had from the state commission.

Had Needham and Martin been real city financiers, they would have made up some great prospectus and sold stock easily up to $100,000 because their thrift and economy would have left enough earnings to pay dividends, at least for a while. Had Needham and Martin been able to see ahead, they would have paid themselves properly and allowed a group of widows and orphans to wonder what had become of their money.

While the theory of actual investment in a property is a basis of rate-making or stock issuance, it should not be applied in such an apparent case as this.

Surely Needham and Martin, their heirs or assigns, have as much right to the fruits of their thrift in a telephone exchange as John and Martha Jensen who went to the half section in a covered wagon, and now live in town upon the fruits of their labors.

It is really difficult to understand the justice of an order which says that $25,000 worth of thrift and energy cannot be capitalized.

There is another phase of the decision which surely has a doubtful aspect. TELEPHONY has no quarrel with any commission, but it surely reserves the right to protest any invasion of the rights of its readers. We surely object to the theory that no cost of securing business should be allowed.

The engineer of the Albion company figures that it costs $4 to secure a city subscriber and $7 to secure a farm subscriber. One of the clearest things known to the telephone business is that it costs at least $5 to secure and maintain a permanent subscriber on the books of a company.

Yet the commission says this: "The commission finds nothing in the history of each company to warrant such an assumption. Both companies started as small units and gradually grew to their present proportions.

"They began business at a time when the public was clamoring for telephone service and when the problem was not one of securing subscribers, but of finding capital to provide the facilities for the service demanded. Moreover, what solicitation was necessary was paid out of the revenues of the business and was an operating charge. The figures submitted by the engineer are mere estimates, there being nothing in the record to support the amounts claimed."

In Albion a competitive situation existed. Any man, connected with a situation of this kind, knows that the permanent gain of one telephone requires work and expense. There are situations which all solicitors possible cannot save, and yet the cost of soliciting is a real and painful thing.

It would be a safe wager that Needham and Martin made many trips and spent much time and money in building up their business. There are some telephone companies which have never directly spent one dollar for soliciting, and they boast of it. But no company exists which has not spent many dollars indirectly.

The great American habit is not to count or care for dollars indirectly spent However, it is a dangerous as well as unjust doctrine for commissions to deny the right of a company to capitalize the cost of securing its business.

We have often heard men say that there is no money in the telephone business. There is no money in the banking business, the grocery business or any enterprise, unless men are thrifty and energetic.

The money made in any business depends upon whether men will do their full share of work or not. The profit of a bank can depend upon whether four or five employes do the work, and it is equally true of any other company.

Needham and Martin found the business wonderfully profitable because they did their own work and had no exaggerated idea of a salary.

A man came to my home town, strung a few wires, put his daughter at the switchboard, and laid the foundation of a company with 3,000 telephones. He is now living in a very pretentious mansion in a metropolis because he, by doing his own work and keeping expenses down, found the telephone business profitable.

Would it be right to penalize the innocent purchasers of the properties created by this man's thrift? It would be just as reasonable for the commission to order the man to sell his home in the metropolis

Applications from Independent Men for Enlistment in Field Battalions United States Signal Reserve Corps Wanted by:

Eastern Department

Chairman, E. D. Schade, Johnstown, Pa.

Secretary, H. E. Bradley, Philadelphia, Pa.

John H. Wright, Jamestown, N. Y., President, Western Pennsylvania and New York Independent Telephone Associations.

H. A. Oberdorf, Columbia, Pa., President, Eastern Pennsylvania Independent Telephone Association.

F. W. Twyman, Charlottesville, Va.

Southern Department

Chairman, J. B. Earle, Waco, Texas.

Secretary, E. C. Blomeyer, Waco, Texas.

Vice-Chairman, R. B. Still, Tyler, Texas, President, Texas Independent Telephone Association.

Southeastern Dept.

Chairman, J. C. Duncan, Knoxville, Tenn.

Secretary, Terry W. Allen, Corinth, Miss.

Central Department

Department Chairman, J. C. Kelsey, Chicago.

Department Secretary, W. S. Vivian, Chicago.

Group Chairmen:

Frank L. Beam, Mt. Vernon, Ohio.

Hart F. Farwell, Terre Haute, Ind.

George W. Robinson, St. Paul, Minn.

Frank H. Woods, Lincoln, Neb.

A. F. Adams, Kansas City, Mo.

and return the money to the purchasers.

The courts have repeatedly said that no hard and fast rule can be applied in rate-making, or stock-issuing cases. No telephone company can report the same condition—each has a distinct problem of its own.

Did you ever hear what was said when a group of telephone men got together to discuss ways and means of action? Every time it soon becomes apparent that each company representative is urging some activity which does not interest the others at all. It is no sign of weakness, and is, from the Independent telephone standpoint, a sure indication of strength.

It is not difficult to see that Needham and Martin, being careful, energetic and thrifty, would evolve a condition different from Brown and Jones, who dislike to work, who paid off notes by new notes, and who liked good dinners at the La Salle Hotel.

The first company would have a small investment, while the second company would have a large investment, naturally of other people's money. But, according to a fixed law of considering investment alone, the Brown and Jones crowd would be allowed $100,000 capitalization on a $50,000 property while Needham and Martin, who robbed nobody, would only be allowed $25,000.

It is certainly clear that fixed ideas of behavior cannot be applied to public utility companies or to any human agency.

A successful business is a wonderful thing. The visitor sees no confusion and finds everything running smoothly. Employes receive pay regularly, bills are discounted, best material bought, dividends paid to stockholders, and the stock commands a high price because the capital stock is low.

One might argue that here was a concern which never had any expense of securing business, for customers stood in line with orders in their hands—but it would be far from the truth.

No one knows how many anxious hours the founders spent, how many times the banks called their loans, and other troubles which do not appear on the books today. But after many trials and tribulations, the banks were paid off, bills began to be discounted, sales agents began to flock around and the magic good will became an active force.

Good will is really all there is to any business. It is all a bank has, and, for that matter, all a government has. It is the vital essence of the business. Yet there are men and groups of men who do not recognize this value at all. They recognize none of the early struggles of the business.

All through history the prodigal son and the lost sheep have occupied the center of the stage, while the faithful son and the 99 good sheep remain far back, if not out of sight. It has been a dangerous precedent for the world.

Needham and Martin made a success of their enterprise. Brown and Jones, unwilling to work, made a failure from the stockholders' standpoint. Both charged the same rates and had the same opportunity.

One built a $50,000 property for $10,000 while the others built up a $50,000 property for $100,000. It is surely apparent that the same rule of behavior cannot be applied to both. No two patients can take the same medicine successfully.

But the greatest point is that two energetic men, with a small amount of money, could build up a successful business and find congenial occupation for a life-time, and work no hardship upon any human being.

It is a distinctive feature of the telephone business that it can succeed anywhere, whether it be mountain or plain, farm or desert, small town or large city. In no other line of activity can a successful business be guaranteed in any locality in the civilized world. There is no place on earth where two telephones or more cannot be used.

It is for this reason, its adaptability to every phase of life, that TELEPHONY protests against one fixed rule for all cases.

MORAL: One swallow does not make a summer.

Exemption of Telephone Men from Draft Practically Assured.

That persons engaged in the business of communication, especially those in the employ of the telephone and telegraph companies, will be exempt from war draft is a matter which is practically assured. The great need of proper facilities of communication to the government was indicated in a statement issued by the Council of National Defense June 9. At the same time this statement offered a sort of an explanation of the reasons for which the government is making extra demands on telephone and telegraph companies.

"The right arm of successful military operations," the council states, "is ability to communicate rapidly and maintain that communication. This is virtually necessary in preparation, no less than during actual operations. To that end the Council of National Defense has been co-operating with the various telephone and telegraph companies. It has received very hearty assistance, and a

statement just made by the committee on communications of the advisory commission of the Council of National Defense gives an idea of the extent of that help.

"At the inception of the war in Europe there were some outlying places not connected by long lines capable of commercial transmission of telephone messages. Since then the American Telephone & Telegraph Co. has extended its lines across the continent, and so improved transmission that it is now possible to communicate by long distance telephone with any section of the United States. As an instance, may be cited the new line down the east coast of Key West, Fla., which will probably not be commercially self-sustaining for many years, if then, but it was done in anticipation of the needs of the government, and the strategic importance of having not only the whole Atlantic coast, but the entire country in speaking distance of Washington.

All government messages and business are being handled on a preferential basis, with right of way over commercial messages. This enables the government to instantly command approximately 20,000,000 miles of exchange and toll lines which connect over 10,000,000 telephone stations. These include the private branch exchanges of all great utility, industrial and transportation companies; all the great commercial and financial establishments of the United States. Thus the government officials have almost instantaneous access to every center of activity. These toll and long distance wires reach every town, hamlet and cross roads of any importance.

As a means of insurance against interruption, there are many alternative routes between the important points of the country, and these could be used almost instantly for communication between any two points, should an interruption occur because of flood, storm, or even foreign occupation. Therefore, it appears impossible to cut off communication between any two important points for even a negligible space of time."

The Roll of Honor

The following officers have been selected and recommended to the chief signal officer at Washington by the Central War Department:

For majors: Claire W. Shands, St. Louis, Mo.; E. O. Baker, Paris, Ill.; and Gustav Hirsch, Columbus, Ohio.

For captains: Lynn E. Mason, Kansas City, Mo.; F. L. Shuman, Bismarck, N. D.; and George Dickerson, Galion, Ohio.

For lieutenants: A. E. Hersberg, Kansas City, Mo.; D. B. Robinson, Windom, Minn.; and Guy Palmer, Columbus, Ohio.

These officers will be assigned to three field battalions of the eight which are to be organized by the Independent telephone companies of the central department.

There are still five captains and five lieutenants to be appointed from Independent telephone companies.

Since the last week's issue of TELEPHONY, the following have volunteered for service in the signal service reserve corps in the central war department:

Nebraska-Iowa Group, F. H. Woods, Lincoln, Neb., chairman.
J. M. Abrams, Dorchester, Neb.
James M. Patterson, Arapahoe, Neb.
Lee R. Miller, Kanara, Iowa.
Bert T. Johnson, Goodwin, S. D.
Ladislar Petracek, Ohiowa, Neb.
Lester R. Dillon, Friend, Neb.
Raymond C. Ludwig, Arlington, Neb.
Troy O. Rinehart, Hastings, Neb.
C. D. Perrin, Lincoln, Neb.
R. H. Ojers, Crete, Neb.
Fred M. Strasser, David City, Neb.
Geo. F. Gorham, Waco, Neb.
Paul A. Schmeltzer, Hastings, Neb.
W. R. Howell, Auburn, Neb.
C. N. Huff, David City, Neb.
Clayton B. Moore, Beatrice, Neb.
Elmer Scherer, Hastings, Neb.
H. F. McCulla, Hastings, Neb.
Vernon Campbell, Hastings, Neb.
John D. Ford, Beatrice, Neb.
P. J. Brunton, Lincoln, Neb.
F. W. McDonald, Pawnee, Neb.
H. L. Crouse, Benedict, Neb.
Raymond Conner, Beatrice, Neb.
William Cummings, Hastings, Neb.
N. T. Rakestraw, Hastings, Neb.
C. B. Meshier, Lincoln, Neb.
Arva D. Cunningham, Woden, Iowa.
W. G. Tinstman, Diller, Neb.
Ned E. Wells, Marathon, Iowa.
C. W. Brubbeman, Farmington, Iowa.
N. E. Kester, Greene, Iowa.
F. C. Boal, Washington, Iowa.
R. W. Coleman, Nora Springs, Iowa.
John E. Garing, Solon, Iowa.
Alfred Bratt, Jr., Monroe, Neb.
Chas. Thulin, Scotts Bluff, Neb.
E. J. Hughes, Concord, Neb.
L. E. Hill, Lincoln, Neb.
M. F. Snavely, Gothenburg, Neb.
A. H. Waymire, Lincoln, Neb.
C. E. Brunton, Hastings, Neb.
A. E. Johnson, David City, Neb.
C. L. Nutzman, Fairbury, Neb.
R. C. Jenkins, York, Neb.
A. M. Williamson, Hastings, Neb.
H. G. Toedter, Hastings, Neb.
L. H. Dillin, Friend, Neb.
P. A. Krahn, Hastings, Neb.
D. N. Starks, Hastings, Neb.
M. L. Ransdell, Auburn, Neb.
Northwestern Group, G. W. Robinson, St. Paul, Minn., chairman.
Joseph C. Gallagher, La Crosse, Wis.
Harry M. Allen, Duluth, Minn.
Raymond D. Harris, La Crosse, Wis.
Ross B. Johnston, Long Lake, Minn.
Daniel L. Boone, Minneapolis, Minn.
Frank Nowak, Minneapolis, Minn.
E. D. Phelas, North Branch, Minn.
Chester H. Dunn, Armstrong, Iowa.
Lars G. Kiland, Madison, Wis.
P. C. Christenson, Springfield, Minn.
Mathew H. Schlosser, Knapp, Wis.
James Ernest, Owen, Wis.
Russell M. Quick, Montfort, Wis.
Abe L. Bigelow, Jr., Ashland, Wis.
B. E. Dahlen, Mount Horeb, Wis.
James E. Fouts, Owen, Wis.
Oscar H. Schleicher, Zumbrota, Minn.
Frederick C. Thompson, Fargo, N. D.
Willard J. Hayes, Portage, Wis.
Sam Hofts, Thief River Falls, Minn.
Van H. Rucker, Dazey, N. D.
Palmer Berg, Langdon, N. D.
Roy E. Wilson, New Rockford, N. D.
Frederick E. Davis, Heaton, N. D.
Victor Peterson, Oakes, N. D.
R. A. M. Baillie, Valley City, N. D.
Carl Lockrem, Zumbrota, Minn.
Burton S. Wilcox, Hensler, N. D.
Charles W. Cushing, Bismarck, N. D.
Central Group, Hart F. Farwell, Terre Haute, Ind., chairman.
Hillard M. Lindsay, Tipton, Ind.
Frank C. Smith, Huntington, Ind.
Walter W. Barnard, London, Ind.
William M. Sheckles, Salem, Ind.
Claude Jameson, Claypool, Ind.
C. V. Retherford, Indianapolis, Ind.
S. N. Patterson, Cromwell, Ky.
Orville Richardson, Centerville, Ind.
Lloyd B. Goodman, La Grange, Ind.
Aaron H. Zimmerly, Olney, Ill.
Herbert L. Espick, Plymouth, Ind.
Harry Kilburn, Dennison, Ill.
Garrison R. Babcock, Chicago.
Southwestern Group, A. F. Adams, Kansas City, Mo., chairman.
Jul. G. H. Math.

In addition to those who have volunteered from this group for the signal service reserve, the following first class telephone men were furnished for the First Missouri Field Battalion Signal Corps of the national guard:

Claude A. Mahan, captain; P. O. Ballzell, F. M. Frazier, Wm. Goodson, N. K. Kemmerdiner, E. E. Lott, Harry N. Miller, Thos. F. McGraw, C. W. Nelson, Chas. L. Nichols, R. W. Rooney, Wm. Shields, and Lando Whitt.

Fundamental Principles of the Telephone Business

A Reading Course Designed to Present Logically the Principles Which Underlie Successful Organization and Operation of Telephone Properties—Prepared Under the General Supervision of Stanley R. Edwards—This Section, "Part VI, The Valuation of Telephone Properties," Written by Chas. W. McKay

Quiz Questions on the Preceding Installment.

177. How are the manhole dimensions measured and recorded? What designations are used to indicate the ducts in a manhole?

178. What costs are included in underground exchange cable account No. 245? Where is the division line between underground cable and the inside wires?

179. In underground toll cable account No. 255, what costs are included?

180. Into what four classes may the exchange underground cable be divided?

181. What measurements are taken after the inspector has completed the manhole data?

182. How is the material of the lateral ducts determined? Of what different materials may laterals be composed and how are they distinguished?

183. What difficulties are encountered in determining the length of lateral ducts and cables?

CHAPTER IX. The Outside Plant Inventory (Concluded).

184. *Method of Measuring Lateral Conduits.*—The method of measuring laterals is illustrated in Fig. 3. The lateral duct measurement should be taken from a point on the pavement directly over the manhole wall to a point on the pavement immediately over the junction of the lateral conduit and riser-bend. The first point may be determined by measuring the distance, inside the manhole, from the edge of the hole cover to the wall and subsequently laying off this measurement on the surface, marking the location of the manhole wall with a chalk line on the pavement.

The point of junction between the conduit and the riser-bend is usually readily determinable. Riser-bends come in standard lengths and bends for a given size of pipe have a standard radius. A riser-bend 3 inches in diameter is generally 90 degrees (quarter circle), bent on a 3-foot radius and has a total length of approximately five feet. The distance from the pole to the junction, then, will equal the radius of the bend—three feet in this case. Lateral *B* entering a building will, of course, have no riser and the lateral measurement will be taken to the building wall.

185. *Determination of Length of Lateral Cables.*—Having recorded the measurements, paving data and the description of riser—in this case (Fig. 3) a 15-ft., 3-in. iron pipe riser made up of a 10-ft. standpipe and a 5-ft. bend—the inspector will next determine the length of the lateral cable.

Lateral cables usually terminate in a loop (cross-connection) box or are spliced directly to the aerial cable at the underground pole. In cases of this kind, the lateral cable length will be the total distance from the manhole splice to the splice at the underground pole (pothead splice to loop box or aerial cable splice, as the case may be).

Occasionally it will be found that the lateral cable extends without a splice to the second or third pole from the manhole. In this event, the lateral cable will be considered as terminating at the point where the cable is attached to the messenger strand and all cable beyond this point will be inventoried as aerial cable.

The length of cable from the top of the riser to the splice—or to the aerial cable strand, if there is no splice—can usually be determined quite accurately by counting the number of pole steps—providing, of course, that the steps are placed in accordance with standard specifications on a three-foot center.

In the case under consideration (Fig. 3), the total lateral cable length is as follows: Two feet in manhole + 150 feet in lateral ducts + 15 feet in riser + 10 feet on pole—a total of 177 feet.

186. *Inventory of Underground Terminal Equipment.*—In inventorying the underground terminal equipment, the inspector should note the make and manufacturers' code number of the terminal, the ultimate pair capacity, the present pair equipment, whether the terminal is protected or unprotected, and the size and make of the pole seat.

In this connection it may be said that a terminal located on the underground pole is considered a part of the underground cable plant only when the lateral cable actually ends in the terminal. A terminal tapped off from a splice between underground and aerial cables is considered as part of the aerial cable equipment and, together with its pole seat, should be so inventoried.

187. *Determination of Size and Gauge of Underground Cable.*—As in the case of the aerial cable, the determination of the size and gauge of the underground cable is necessarily a difficult problem. It is obviously out of the question to open working cables for the purpose of counting pairs or determining wire gauges. However, given the make of the cable and its capacity, it is possible to make a reasonably accurate guess as to the size and gauge by ascertaining the diameter.

The importance of checking results so obtained by every other possible means cannot be exaggerated. The appraisal engineer should review the invoices in an effort to determine the size and gauge of all cable purchased during the various installation periods. He should also thoroughly investigate all available cable records and compare them with the results obtained in the field. A still further check may be effected by totaling up the

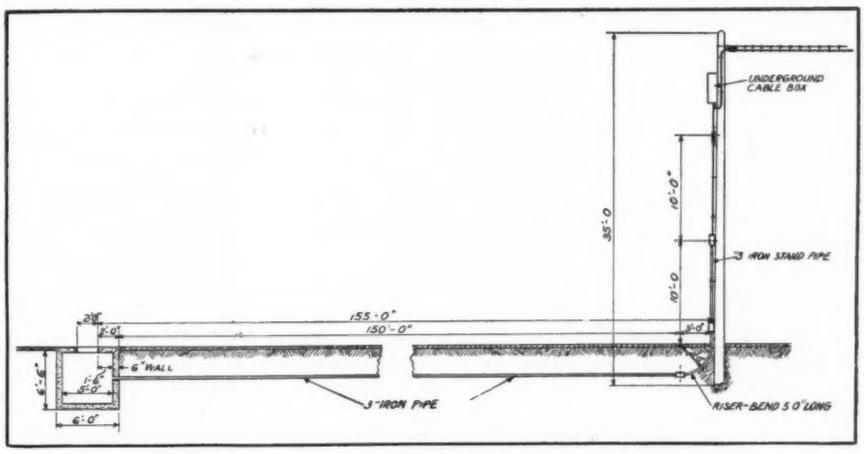


Fig. 3. Illustration of Method of Measuring Laterals.

pairs terminated in each cable and, after making allowances for multiple repairs and for unterminated pairs, comparing the sizes ascertained in this way with those derived in the field.

In some cases, pieces of defective cable, removed from plant in clearing trouble, may be found in the scrap heap. If these pieces can be identified as to their previous location in the plant, they will serve a real purpose toward the solution of the problem, for it will be, of course, possible to accurately gauge the wire, count the pairs and measure the diameters.

In Fig. 4 is shown the classification of the various major subdivisions of the outside plant under the Interstate Commerce Commission's standard system of accounts.

188. *Block and House Cable.*—The accurate inventory of the block and house-cable plant is one of the most difficult problems confronting the appraisal engineer. Fortunately, however, except in the case of the larger cities, a comparatively small amount of this type of construction is encountered.

Due to the fact that block and house cables are often located in inaccessible places, such as basements and shafts, it is obviously out of the question to measure all of the cable. Usually, however, companies maintain reasonably accurate records, in the form of blueprints and house diagrams made up from the original construction plans, of this portion of the plant.

Probably the most satisfactory way to effect the inventory of the block, and house-cable plant is to take copies of these plans into the field and check them wherever cable is found accessible, thus gaining sufficient data to warrant an estimate of the inaccessible portions. Terminals are usually located in readily accessible places and should be carefully checked.

189. *Submarine Cable, Exchange Account* 246, *Toll Account* 256.—"This account should include the cost of submarine cable, cable towers, loading coils, cable boxes and fittings, and other materials used in the installation of such cables, and other costs incident thereto."

For obvious reasons it is impossible to measure submarine cables in the field. There are several ways, however, by which the necessary data can usually be obtained. In most plants submarine cables are rather uncommon and it will usually be found that a record of the length of the cable, as installed, is available some place in the records. If not, it is probable that some employe will remember the time that the cable was placed and from whom it was purchased, and then by writing to the manufacturer the necessary information can be obtained.

If neither of these methods proves practicable, the length of the submarine cable can be computed theoretically by ascertaining the total resistance between the terminal points and the resistance per lineal foot.

Other data as to cable terminals, cable towers, anchorage, etc., should be obtained and recorded in sufficient detail to facilitate the appraisal.

(To be continued)

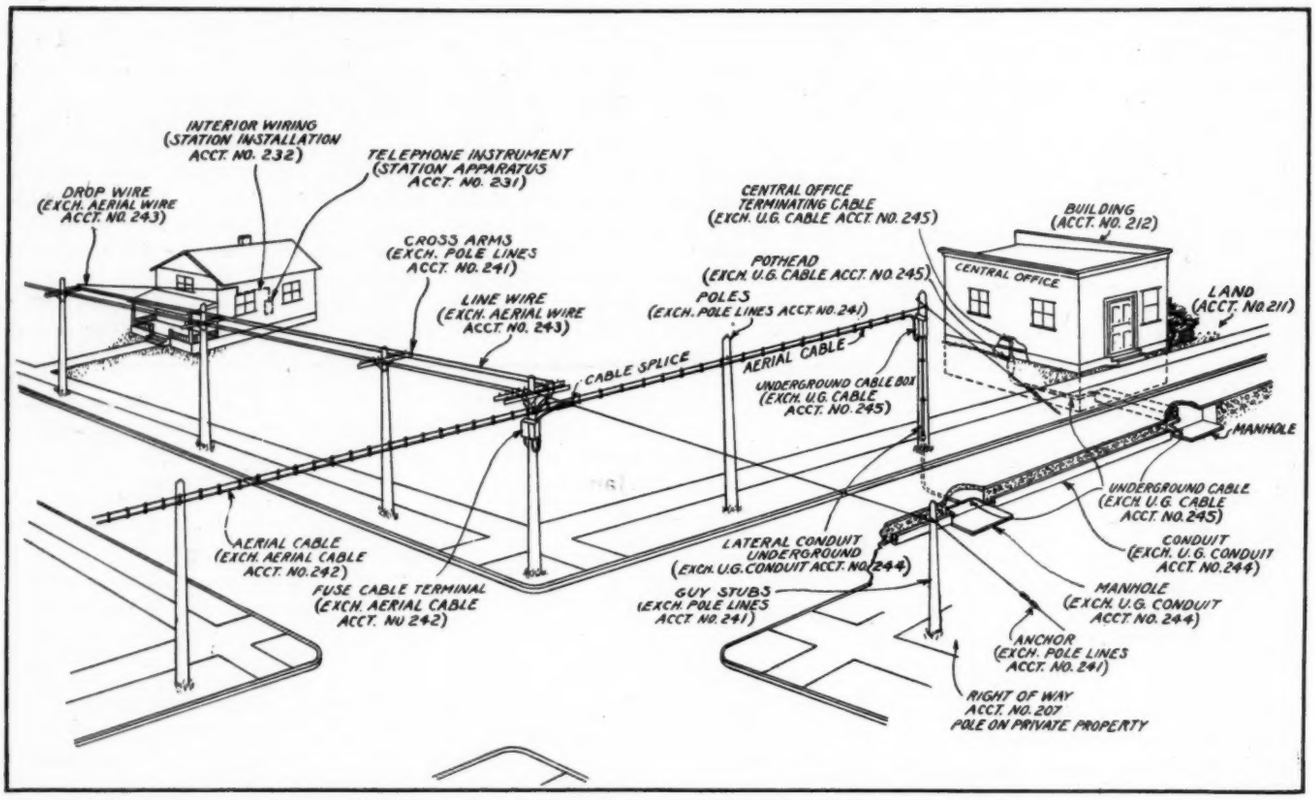

INTERIOR WIRING (STATION INSTALLATION ACCT. NO. 232)
TELEPHONE INSTRUMENT (STATION APPARATUS ACCT. NO. 231)
DROP WIRE (EXCH. AERIAL WIRE ACCT. NO. 243)
CROSS ARMS (EXCH. POLE LINES ACCT. NO. 241)
LINE WIRE (EXCH. AERIAL WIRE ACCT. NO. 243)
CENTRAL OFFICE TERMINATING CABLE (EXCH. U.G. CABLE ACCT. NO. 245)
BUILDING (ACCT. NO. 212)
POTHEAD (EXCH. U.G. CABLE ACCT. NO. 245)
CENTRAL OFFICE
POLES (EXCH. POLE LINES ACCT. NO. 241)
LAND (ACCT. NO. 211)
CABLE SPLICE
AERIAL CABLE
UNDERGROUND CABLE BOX (EXCH. U.G. CABLE ACCT. NO. 245)
MANHOLE
UNDERGROUND CABLE (EXCH. U.G. CABLE ACCT. NO. 245)
AERIAL CABLE (EXCH. AERIAL CABLE ACCT. NO. 242)
LATERAL CONDUIT UNDERGROUND (EXCH. U.G. CONDUIT ACCT. NO. 244)
CONDUIT (EXCH. U.G. CONDUIT ACCT. NO. 244)
FUSE CABLE TERMINAL (EXCH. AERIAL CABLE ACCT. NO. 242)
GUY STUBS (EXCH. POLE LINES ACCT. NO. 241)
MANHOLE (EXCH. U.G. CONDUIT ACCT. NO. 244)
ANCHOR (EXCH. POLE LINES ACCT. NO. 241)
RIGHT OF WAY ACCT. NO. 207 POLE ON PRIVATE PROPERTY

Fig. 4. Classification of the Various Major Subdivisions of Accounts of the Interstate Commerce Commission.

Louisville the Cantonment for Mobilization of Troops

Among those who have been directly interested in the announcement that the Louisville (Ky.) site has been selected for the cantonment for mobilization of the troops to be drafted next September are Louisville's telephone men. No specifications as to what will be required from the telephone companies have been made public as yet, but it is a foregone conclusion that the preparations will include installation of a switchboard which will serve the entire camp, for which there have been some 2,000 acres secured, with a maneuvering ground about one mile wide and a mile and a half long.

The expectation is that one company will have the contract to install the switchboard, but that both the Louisville Home and the Cumberland telephone companies will connect with the switchboard, since the government would want the most complete service possible. One of the satisfactory things about the location is that it is only about six miles from the heart of the city and that the means for establishing communication have practically all been constructed in the ordinary extension of the service.

Financial Statements and Reports

Reports Issued by Telephone Companies in Various Parts of this Country and Canada Covering Operations During the Past Year—I. C. C. Summary of Class A Company Reports for January—Officers Selected for Ensuing Year

Growth of Canadian Telephone Companies from 1913 to 1916.

The accompanying table shows the capitalization, cost, revenue, operating expenses and other data relative to the telephone companies of Canada for 1913 to 1916. For the year ended June 30, 1916, there was an increase in capitalization of $2,635,322.

Items.	1913	1914	1915	1916
Capitalization	$59,847,004	$70,291,884	$74,284,991	$76,920,314
Cost	$69,214,971	$80,258,356	$83,792,583	$88,520,020
Revenue	$14,879,278	$17,297,268	$17,601,672	$18,594,267
Operating expenses	$11,175,689	$12,882,402	$12,836,715	$11,147,200
Remuneration	$ 6,839,308	$ 8,250,253	$ 8,357,029	$ 7,852,719
Number of telephone companies	1,075	1,136	1,396	1,592
Wire mileage	1,092,586	1,343,090	1,452,360	1,600,564
Number of telephones	463,671	521,144	533,090	548,421
Number of employes	12,867	16,799	15,072	15,247
Persons per telephone	16.2	15.5	15.1	14.6
Persons per mile of wire	6.8	6.0	5.6	5.0

Comparative Statement of Canadian Telephone Statistics.

Of the 1,592 organizations reporting to the Canadian government there were four classed as government, 67 municipal, 622 stock, 765 co-operative, 23 partnership, and 111 private.

In Manitoba and Alberta, telephone service is carried on by the provincial governments. In Saskatchewan the government operates in all the principal centers of population; but throughout the rural districts there are more than 660 independent lines on a co-operative basis.

Annual Report of Telephone Company at Ferndale, Cal.

The Eel River & Southern Telephone & Telegraph Co., of Ferndale, Cal., reports for the year 1916 operating revenues of $8,141. Deducting the operating expenses, $6,151, left net operating revenues of $1,990. Deductions for rent and taxes and additions for non-operating revenue, left a net income of $1,015.

Dividends to the amount of $844 were paid. Crediting the balance to the surplus account brought the surplus, as of December 31, 1916, up to $2,770, as against $2,599 the previous year.

Blue Earth Valley Telephone Co.'s Annual Report.

The financial report of the Blue Earth Valley Telephone Co., of Blue Earth, Minn., for 1916, shows gross earnings of $33,875, an increase of 9 per cent. over the preceding year. The operating expenses were $29,850, an increase of 11 per cent. A dividend of 6 per cent. was declared at the directors' meeting, and a balance of $101 was carried to the surplus fund.

The following were elected directors for the ensuing year: F. H. Davis and D. W. Gretorex, of Blue Earth; J. E. Rorman, of Winnebago; W. A. Eckles, of Nora Springs, Iowa, and L. N. Olds, of Wells. The following officers were elected: President, W. A. Eckles; vice-president, J. E. Rorman; secretary and treasurer, D. W. Gretorex.

I. C. C. Statistics of Class A Companies for January.

Early this month the division of statistics of the Interstate Commerce Commission issued a summary of the monthly reports of the Class A telephone companies, both Bell and Independent, for the month of January, 1917. It is compiled from 60 reports of revenues and expenses of telephone companies and also has a comparative summary of the figures for the same month in 1916.

The total operating revenues show an increase of 15.6 per cent. The number of subscriber stations at the end of the month was 7,288,134, as against 6,606,056, an increase of 10.3 per cent. The operating expenses showed an increase of 17.6 per cent. over that of January, 1916. The operating income shows a total increase of 9.3 per cent. The uncollectible operating revenues showed a decrease of 16.5 per cent. A table giving the figures for the various revenues and expenses is given on this page.

Annual Report of the Pasadena (Cal.) Home Company.

The operating revenues of the Home Telephone & Telegraph Co., of Pasadena, Cal., for 1916, are reported at $303,547. Deducting the operating expenses, $225,048, left operating revenues of $78,499. After making deductions for interest, rent, taxes, etc., there was a corporate loss for the year of $32,965. The deficit on December 31, 1916, was $180,510, as against $138,468 at the close of 1915.

Annual Report of the New Brunswick Telephone Co.

At the annual meeting of the New Brunswick Telephone Co., of St. John, New Brunswick, Canada, the directors were re-elected as follows: B. H. White, Sussex; A. W. Bennett, Sackville; F. B.

Item.	1917.	1916.	Increase—Amount.	Increase—Ratio, Per Cent.
Number of company stations in service at end of month	7,288,134	6,606,056	682,078	10.3
Revenues:				
Subscribers' station revenues	$16,661,667	$14,754,220	$1,907,447	12.9
Public pay station revenues	1,466,982	1,224,989	241,993	19.8
Miscellaneous exchange service revenues	263,598	230,543	33,055	14.3
Message tolls	6,356,564	5,210,529	1,146,035	22.0
Miscellaneous toll line revenues	598,464	505,668	92,796	18.4
Sundry miscellaneous revenues	259,157	235,895	23,262	9.9
License revenue—Cr.	956,624	826,425	130,199	15.8
License revenue—Dr.	954,157	813,616	140,542	17.3
Telephone operating revenues	$25,608,899	$22,174,654	$3,435,245	16.6
Expenses:				
Depreciation of plant and equipment	$ 4,557,440	$ 3,997,312	$ 560,128	14.0
All other maintenance	3,333,450	2,735,771	597,679	21.8
Traffic expenses	5,330,638	4,322,296	1,008,342	23.3
Commercial expenses	2,476,321	2,200,111	276,210	12.6
General and miscellaneous expenses	1,076,222	1,004,845	71,377	7.1
Telephone operating expenses	$16,774,071	$14,260,335	$2,513,736	17.6
Net telephone operating revenues	$ 8,834,828	$ 7,914,319	$ 920,509	11.6
Other operating revenues	$ 1,661	$ 1,299	$ 362	27.9
Other operating expenses	1,313	1,135	178	15.7
Uncollectible operation revenues	125,592	150,381	* 24,789	*16.5
Taxes assignable to operations	1,542,377	1,236,270	307,107	24.9
Operating income	$ 7,167,207	$ 6,528,832	$ 638,375	9.3

*Decrease.

Summary of Monthly Reports of Class A Telephone Companies for January.

Black, Sackville; R. O'Leary, Richibucto; L. B. MacFarlane, Montreal; A. R. Slipp, Fredericton; W. B. Snowball, Chatham; R. B. Emerson, St. John; Hon. F. B. Thompson, Fredericton; F. B. Carvell, M. P. Woodstock, J. M. Robinson, St. John; F. W. Sumner, Moncton; G. W. Gannong, St. Stephen; J. L. McAvity, St. John; H. P. Robinson, St. John. S. H. White was re-elected president; Hon. F. P. Thompson, first vice-president; F. B. Black, second vice-president, and A. W. McMackin, secretary-treasurer.

The statement of the assets and liabilities of the company showed that on March 31, 1917, the assets were $2,170,019 and liabilities $2,145,030, leaving a surplus of $24,989. The earnings for the year ending on that date were $539,613, and expenses $430,288, leaving a net revenue of $109,324. In the profit and loss statement $139,493 was shown to credit and $114,504 to debit.

The annual report submitted by President White stated more than $200,000 had been expended in the extension of toll lines, the erection of buildings and the purchase of real estate. The gain in the number of telephones had been 1,691 as against a gain of 912 for the previous year, the total number of instruments being 18,293.

Earnings of the Keystone Telephone Co. for April.

The Keystone Telephone Co., of Philadelphia, Pa., has issued its comparative statement of earnings for the combined companies for the month ended April 30, 1917, and the four months ended on that date:

	For Month Ended April 30, 1917	Year previous
Gross earnings	$130,196	$120,326
Operating expenses and taxes	66,262	58,394
Net earnings	$ 63,934	$ 61,932
Less interest charges.	27,792	27,453
Surplus and reserve..	$ 36,142	$ 34,479

	For Four Months Ended April 30, 1917	Year previous
Gross earnings	$514,270	$474,166
Operating expenses and taxes	265,824	236,350
Net earnings	$248,446	$237,816
Less interest charges.	111,167	109,812
Surplus and reserve..	$137,279	$128,004

Financial Statement of California Telephone & Light Co.

The California Telephone & Light Co., operating in Santa Rosa, Cal., and vicinity, has filed with the railroad commission its report for the year 1916, showing a gross operating revenue of $131,498. The operating expenses were $74,641, leaving a net operating revenue of $56,857.

The net income for the year was $20,099. Miscellaneous additions to and deductions from the income left a balance of $17,657, which was credited to the surplus account. The surplus on December 31, 1916 was $29,779 as against $12,122 at the close of the previous year. The balance sheet, as of December 31, 1916, is given below:

Assets.	
Total fixed capital	$1,530,350
Cash and deposits	17,451
Notes receivable	5,333
Accounts receivable	18,775
Other current assets	4,215
Working assets	15,354
Prepaid expenses	8,482
Unamortized discount on securities and expense	43,482
Miscellaneous	7,908
Total	$1,651,350
Liabilities.	
Capital stock	$1,110,587
Funded debt	472,000
Accounts payable	13,048
Interest and taxes accrued	7,080
Miscellaneous	2,670
Reserves	16,186
Corporate surplus	29,779
Total	$1,651,350

Annual Report of San Diego (Cal.) Home Telephone Co.

The annual report of the San Diego (Cal.) Home Telephone Co., for 1916, shows gross revenues of $120,292. The operating expenses were $89,447, leaving a gross corporate income of $30,845. After making numerous deductions for interest, rent, taxes and miscellaneous expenditures, there was no balance. The surplus on December 31, 1916, was therefore the same as on December 31, 1915, $85,492.

The balance sheet of the company, as of December 31, 1916, follows:

Assets.	
Total fixed capital	$1,002,213
Cash and deposits	15,800
Accounts receivable	471
Other current assets	1,835
Investments	36,458
Working assets	468
Unamortized discount and expense	729,315
Total	$1,786,560
Liabilities.	
Capital stock	$ 730,500
Funded debt	735,800
Accounts payable	1,187
Miscellaneous	92
Reserves	233,489
Corporate surplus	85,492
Total	$1,786,560

Annual Report of Monrovia (Cal.) Telephone Co.

The Monrovia Telephone Co., which operates in Monrovia, Cal., reports for the year 1916 operating revenues amounting to $22,856; operating expenses of $15,943 and a net operating revenue of $6,913. After making deductions from the income, including $1,251 for dividends, there was a balance of $2,723. The surplus account on December 31, 1916, shows a deficit of $1,745 as against $4,468 at the close of the preceding year.

United States Long Distance Company Issues Annual Report.

The United States Long Distance Telephone & Telegraph Co., of Los Angeles, Cal., reports for the year ended December 31, 1916, operating revenues of $331,318. The expenses were $278,804, leaving net operating revenues of $52,514. Non-operating revenues brought the gross corporate income up to $56,494. Deductions for interest on funded debt, rent, taxes, etc., were made, leaving a net corporate income of $611.

After making miscellaneous additions to the amount of $2,703 and deductions to the amount of $16,629, there was a corporate loss of $13,315, thus leaving a surplus, on December 31, 1916, of $49,123 as against $62,438 the previous year.

The balance sheet follows:

Assets.	
Total fixed capital	$3,911,994
Cash and deposits	109,499
Accounts receivable	43,115
Investment	5,000
Working assets	3,779
Prepaid expenses	9,345
Miscellaneous	148,640
Total	$4,231,372
Liabilities.	
Capital stock	$5,000,000
Funded debt	690,000
Accounts payable	17,666
Interest and taxes accrued	14,476
Miscellaneous	93,759
Reserves	366,348
Corporate surplus	49,123
Total	$4,231,372

Annual Report of Santa Monica Bay Home Telephone Co.

The Santa Monica Bay Home Telephone Co., of Santa Monica, Cal., reports operating revenues of $50,908 for the year ended December 31, 1916. The operating expenses were $31,498, leaving a gross income of $19,410. The net income was $6,182, bringing the surplus account up to $21,962.

Western Telephone Co., Woodburn, Ore., Issues Report.

The Western Telephone Co., of Woodburn, Ore., has filed its annual report with the public service commission for the year 1916. Its operating revenues are given as $6,972, operating expenses, $6,429, leaving a gross income of $543.

Hood River (Ore.) Company Issues Annual Report.

The annual report of the Oregon-Washington Telephone Co., of Hood River, Ore., shows operating revenues of $41,985 and operating expenses of $32,545. The report shows a final income balance deficit of $4,088, after making deductions from the gross income.

The Eastern Traffic Association

Factors Leading Up to Organization of Eastern Traffic Association Which Has Now Become a Power in the Independent Field—Extent of Territory Which Its Membership Covers—Scope of Work Which Is Being Carried On

By H. E. Bradley

Turning back to the days when Independent telephone service was looked upon as a huge joke, and hostile interests were constantly belittling and hampering the efforts of the men who were the pioneers in the Independent field, we find, in and around the city of Philadelphia, seven Independent companies struggling against the obstacles constantly laid in their path by the opposition.

That it was a struggle in those early days none can deny, but with such a determined spirit had these early pioneers labored that by the fall of 1900 these seven companies had managed to connect their toll lines in such a manner that it was possible for each to give a fair quality of toll service to the others. No thought or consideration, however, was given to the question of how this class of service was to be handled or accounted for, no particular care was taken to keep accurate records and no settlements between companies were attempted.

By the middle of 1902 this interchangeable business had increased in volume until it became imperative that some plan should be devised for its care—some plan that would systematize methods of reporting, checking and pro-rating, and provide for standard rates and routing instructions between all points.

During September and October, 1902, several meetings were held in Philadelphia, attended by the officers of the seven companies previously mentioned, with the result that at a meeting held on November 17, 1902, in the offices of the United Telephone & Telegraph Co., at that time located at 112 North Broad street, Philadelphia, the Eastern Traffic Association was organized.

The officers elected at that meeting were: C. E. Wilson, of the Keystone Telephone Co., president; W. D. Barnard, of the United Telephone & Telegraph Co., vice-president, and William W. Olheiser, of the Eastern Telephone & Telegraph Co., secretary-treasurer. Mr. Wilson retained the office of president from that time to the time of his death in 1913, and much of the early success of the association was due to his interest and influence. Mr. Barnard also retained the office of vice-president until his death, late in 1905, and worked diligently in the interest of the association.

Offices were immediately opened in the Keystone building, in Philadelphia, and the present secretary-treasurer was employed as superintendent, to take charge of the work and install the system which had been outlined by him at the meetings previously held.

The first six months were employed in compiling the data to carry on the work. It was necessary that the association have

President E. D. Schade.

a complete list of all the points operated by each company and an accurate circuit map of each company's lines. Strange as it may seem, it was found that this information was not possessed by some of the companies themselves. One company had no chart record of its circuits, and in order to get this information it was necessary to call up each individual office and test out each circuit. Another had no complete record of its toll points, while another made no ticket record of calls.

Of the other four companies each was doing its best, in its own way, to care for the business it was able to handle. Rates were usually whatever each company chose to charge; no attention was paid to overtime charges and an operator was generally compelled to try out a circuit before she could tell if it were possible to give service to the point desired.

This was the condition of affairs when the Eastern Traffic Association began its campaign for the standardization of interchangeable toll service. The very first step taken was the adoption of a standard toll ticket for "in," "out" and "through" business, and a standard form for making reports to the association. Millions of these forms have been used, and with slight changes they are still in use today.

The first settlement attempted was for May, 1903. There being no reliable records of business prior to that date, an accurate settlement was absolutely impossible, and it was decided that each company should keep whatever money it had collected on business sent to the others. In looking back over those first reports, it is hard to realize that such conditions could ever have existed. When we say the first settlement "attempted" we use the word advisedly, for that first attempt was almost a failure. The reports were so far from correct that it was necessary to get a second report from three of the seven companies before a settlement could finally be made.

Following the standardization of reporting methods, a tariff and route book was issued, giving a list of all the points operated by the companies, the rates between all exchanges and the best routes, so far as they could be determined with the meager information at hand. These books, though far from correct in many details, were a great help to the companies and the means of greatly increasing the toll business. Keeping pace with the increase in membership and territory covered, four separate issues of tariff and route books have been made, with supplements from time to time, and a fifth issue is now in course of compilation.

From this small beginning of seven companies the association has enjoyed a gradual growth to its present proportions. Its membership now numbers 88 companies operating in eight different states. During the 14 years since its organization there have been admitted to membership 117 companies. The difference of 29 between that number and the present membership is accounted for by the fact that 20 have been consolidated with other companies still members, eight have sold out to the opposition and one was forced to lose its membership when a connecting company sold out.

The membership is distributed as follows: Pennsylvania, 67; New Jersey, nine; Ohio, five; New York, four; Delaware, one; West Virginia, one, and Maryland, one. The eighth state is Virginia, a portion of which is operated by one of the Pennsylvania companies. While West Virginia shows but one, that company represents a consolidation of

territory formerly operated by six separate companies, and the five Ohio members are sufficient to give access to points in all parts of that state, as well as through to Indiana and Michigan points. It will also be noticed that the association enjoys the distinction of never having lost a member through resignation.

In the following statement is shown the amount of business handled and number of messages reported, yearly, since the association began making settlements:

Year.	Total Business.	No. of Messages.
1903 (7 mos.)	$ 37,023	147,095
1904	61,158	235,224
1905	130,145	456,132
1906	177,994	689,667
1907	191,275	742,750
1908	204,857	816,331
1909	235,257	891,692
1910	259,874	929,563
1911	261,207	967,435
1912	308,576	1,007,349
1913	342,201	1,137,337
1914	342,284	1,251,308
1915	366,561	1,593,148
1916	411,705	1,784,678
Total	$3,330,117	12,649,709

It will be noticed by these figures that every year has shown a substantial increase over the preceding year, the increase of 1916 over 1915 being $45,144 in tolls and 191,530 messages. The association handles only interchangeable toll business, and has nothing whatever to do with the toll business handled over any one company's line.

In 1906 an interchangeable coupon plan was adopted by which each company was enabled to sell to its subscribers, at a reduced rate, coupons which would be accepted by any member of the association in payment for interchangeable toll service. Since this plan went into effect coupons valued at $544,108 have been issued to the various companies, which should prove beyond a doubt that, as a business proposition, the coupon is worthy of some consideration. In 1916 coupons valued at $80,270 were issued, which is an increase over 1915 of $30,055.

In April, 1915, at a special meeting of the association held in Harrisburg, Pa., it was decided that all final settlements should be made through the association, beginning with the business for May, 1915. Prior to that time it had been the custom of the association to mail a settlement sheet to each member each month, showing the individual balances and leaving the final settlement to be handled direct between companies. This change has been of the greatest advantage to all companies and has simplified to a minimum the troubles of settling for this class of service. Since this plan was adopted, the association has handled in settlement with its members $103,012, $37,427 for the last seven months of 1915 and $65,586 for 1916.

As an example of what this plan means to the companies, take the settlement sheets of two of our members for the same month, one having a credit balance, the other a debit balance.

The balance sheet of one company shows nine individual debit balances amounting to $1,309 and 12 individual credit balances amounting to $226. Under the old plan this company would pay out $1,309 in nine various amounts while endeavoring to collect from 12 different companies this credit of $226.

Under the present plan this company merely sends to the association in one check the difference between the debit and credit balances, or $1,083, and the entire settlement is made.

Another company has a balance sheet showing 21 individual debit balances amounting to $113, and 24 individual credit balances amounting to $467. In this case the company has nothing at all to pay out, and at the end of the month the association forwards a check for $354. A more simple method of settlement would be hard indeed to find, and that it has taken well with our members is shown by the fact that of the $65,586 interchange for the year 1916 there was but $249 due the association December 1.

On November 1, 1916, the association took over the service work in Pennsylvania formerly carried on by the Eastern and Western Pennsylvania Independent telephone associations. The advisability and wiseness of this move can readily be understood. It relieves the companies of the paying of two assessments, reduces the cost in most cases and equalizes it in all, as well as extending the service work to cover all the companies in the state.

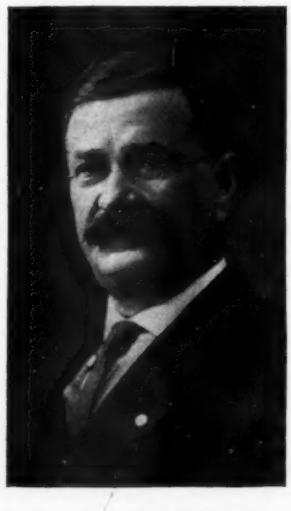
During the past year the association has taken charge of the filing with the public service commission, bureau of rates and tariffs, all the interchangeable rates in Pennsylvania. The secretary's office is now at work on a new issue of tariff and route books, and a new schedule of rates, which will conform to the one now in use by the opposition company. In instances where connecting Independent companies have been purchased by other interests, the connections have been maintained and business handled over such lines is settled through the association.

Like all such organizations, the association has had its bumps. It has been belittled, criticised, investigated. It has "gone broke." Those days are past, and through it all the association has grown and prospered until it has become a power in the Independent telephone field.

The offices of the Eastern Traffic Association are located at 421 Chestnut street, Philadelphia, Pa., and the officers of the association are as follows: President, E. D. Schade, Johnstown, Pa.; vice-president, W. H. Wilson, Erie, Pa.; E. M. Cooke, Philadelphia, and secretary-treasurer, H. E. Bradley, Philadelphia.

Secretary H. E. Bradley.

Vice-President E. M. Cooke.



Vice-President W. H. Wilson.

Practical Subjects—Discussions

Some Telephone Advertisements of a New York Artist.

A series of advertisements of the Chesapeake & Potomac Telephone Co. were reproduced in a recent issue of The Transmitter. The advertisements were used last year as street car cards, blotters, and in several instances as billboard posters in Baltimore and Washington, and brought cordial comments from a sometimes advertising-bored public.

seven cents a day will bring it in and keep it there! just imagine, only 7 cents! the home
ask St. Paul 9000
O daddy, come home quick—mother's hurted!
The TELEPHONE— useful every day and always ready in emergencies— $2 a month—7¢ a day! ask St. Paul 9000
If you're tired, ill, or the weather's bad—why, shop by TELEPHONE! Goodness! It's only 7¢ a day! ask St. Paul 9000
"Daddy, just because we don't know what we're missin' is no sign we're not foolin' ourselves. Is savin' $2 a month worth doin' without a telephone? Only 7¢ a day, Daddy?" ask St. Paul 9000
"It's lucky you had that telephone, madam! I was just leaving my office to be gone all day. We can save your kiddie now!"
ask St. Paul 9000

Some Artistic Advertisements.

The series was designed by Frederic G. Cooper, a New York artist whose work is seen almost daily in both the advertising and general reading sections of the country's national magazines. Life, Collier's Weekly, The Saturday Evening Post, and numerous other mediums carry his work.

Of the six drawings here reproduced, that in the upper right corner, "O Daddy, come home quick!" proved the most popular.

This is believed to be Mr. Cooper's first venture into the telephone field, but judging by the cordial reception given his fresh viewpoints and whimsical forms of genius, it will not be the last.

Utilize the Telephone Operator's Training to Best Advantage.

The telephone is always first aid in emergency. Its users seek it to relieve sorrow and distress—to give peace and comfort.

Now, when every one is doing his "bit" for his country, why should not the telephone operator add hers? She could be of no greater service than right where she is now—at her switchboard. The soldier is trained to serve his country with no greater efficiency than the operator is trained to serve the telephone world. Her training is now most valuable to her country with the attention she is guarding her work; her sympathetic yet cheerful voice will tend to relieve anxiety to the ones at home.

Somewhere an old soldier is listening to the voice of "Central." How much attention and duty is shown in that voice. How quick and ready she is for any emergency! To him she is like a "sentinel"—and he is recalling memories of long ago. Someone has received discouraging news, but when the cheerful voice of "Central" is heard, she has become more brave and hopeful.

In our own sorrows, be calm and brave that we may be of greater assistance to others. So let us put into our work the spirit of willingness and good cheer and no battle will be more bravely fought than ours in the success to aid human hearts.

Miss Katherine O'Brien,
Chief Operator, Illinois Telephone Co.
Jacksonville, Ill.

Data on Auto Truck Trailers for Hauling Poles.

In comparing the expenses of using horse and auto trucks to transport poles, the Springfield (Mass.) district of the New England Telephone & Telegraph Co. recently found that the truck-drawn trailer will do the same work as a horse-drawn trailer in about one-sixth of the time.

During 115 hours of pole hauling in 12 days the truck traveled 441 miles (709.7 km.) at a cost of little more than 25 cents per mile (17.7 cents per km.). Using horses for the same work would have required 71 days at a rate of 97 cents per mile (69 cents per km.).

An additional point in favor of such trucks is the fact that the hired teams are slow in delivering poles, causing a great deal of lost time and often necessitating an additional light team to transport the men and tools. When using a truck and trailer, the men, poles, and tools will arrive on the job at the same time, so the work can proceed without delay.

Sunshine and Shadows Along the Telephone Trail.

By Well Clay.

I paid a dollar down on a Liberty bond
And agreed to pay the rest.
I'm no good to fight but my heart is right
And the loan is merely a test.

They need the *money* to win the war,
And they need the *men* to fight.
But the greatest need is the actual deed
Which shows that a man is *right*.

Whether a man is for or a man's against
The nation in times of stress,
Is said to be told by the way he takes hold
To help when danger doth press.

So whether you give a thousand in cash,
Or whether you shoulder a gun,
Will show you are right and help win the fight,
And you'll feel that your duty is done.

It's hard, these days, to leave out reference to the war and things which pertain thereto when the land is full of preparations for war, and rumors of conflict. With us, it is true, the war is mostly on paper as yet, but in addition to the Liberty Bond, there will come a time later when we have to make some actual payments, in men and lives on the battlefields of the old world. Many men will be called upon to give up their lives on the plains where generations ago their very forefathers dwelt; fighting a foe allied to them in blood.

We have had the draft, and the young men have come heroically or obediently forward, whichever way you wish to express their acquiescence in the order from Washington. In a short time we will have a huge army in preparation for an event which, we hope will be distasteful to certain helmet-covered heads of kaiserland. For each man who shoulders his

gun to shoot, there must be several men behind the lines to shell out many dollars to feed, clothe, and maintain him.

For every operator in a telephone exchange with whom the public comes in contact, there must be several other employes, whom the public rarely sees, to keep up the lines, switchboards, dynamos and plant in general. The pretty little operator, who takes your call at the booth in the big hotel, must be backed up by the men in greasy overalls down in the cable subways; by the men belted and spurred, who hike the lines; by the engineers who furnish the motive powers for the dynamos; by the draftsmen who furnish the plans from the directions of the plant engineers; the executive officers; to say nothing of the stockholders, who furnish the money for the whole.

The operator is but the visible indication which the party, who wishes to call some one at a distance, sees. She is at the terminal of one of the thousands of lines of communication which radiate from the central office.

The man at the front is likewise to be backed by unit upon unit back to the stockholders, which, in this case are the boys and girls who buy the Liberty Bonds, and whose dividend, in case one is finally declared, will be the rights of liberty and individualism under a government by the people, for the people. In case the front is worn away, as it will be in places, the entire system will respond by pushing another forward to fill the place and bear the brunt of the grinding between the mill stones of war.

The broken branch is replaced by a new shoot and the ability to constantly be able to put forth new shoots will determine, not only the victor in the present conflict, but will determine and change the history of the world from the apparent course it has followed for decades, to an entirely new plan of procedure.

It is not conceivable that the world, even if weakened to the point of exhaustion by war, can suffer itself to sink back to the abyss of ignorance and primitiveness from which it has emereged after an effort of ages at the cost of untold bloodshed for superstition, subjection or protection.

It is not to be thought that we will voluntarily relinquish the prizes we have gained, or which have been handed down to us in the form of scientific discoveries or practical inventions, and lapse again into lives of savage sloth where the electric light shineth not and the telephone telleth no longer. There must be first a settlement of the vital question which underlies this war as to whether the world is to be ruled by force and exploited for the benefit of royalty, or whether it is to be ruled by reason and the government conducted for the greatest good to the greatest number—as our friend Jim Shoemaker used to say often and copiously.

It seems sort of trivial to leave this great world war and go out in the country to reset broken down or burned off poles along the lines, as is our present intention when this article is finished—providing some guy does not come in the meantime and tell too many lies about how the bass are biting. But, as we figure the matter out, we will be doing a needful service by putting and keeping the lines in order. If we do something which we understand doing, and which has been intrusted to us to do, and leave the war business to someone whose business it is to attend to that part of the program, we will accomplish more than if we spent hours and hours down by the postoffice talking about the matter.

A telephone company is like an army in the matter of replenishing its wornout material. If it cannot be ready and able to replace each pole on the line of duty when it wears out or is wrecked beyond repair by its enemy, the elements, it cannot maintain its property in entirety and, therefore, cannot do battle with and capture enough dollars to pay the venture.

The pen may be mightier than the sword, but the dry battery is quite a person when it comes to circulating conversation. If the batteries are not replenished when exhausted, the telephone is of as little might as the pen without the necessary ink with which to make its might felt.

In times of peace, prepare for war; and in summertime, prepare for the war of elements which winter annually lets loose. There is no better time in which to go over your outposts thoroughly and inspect each sentry on duty, to see if it is on duty and fit, than now.

A line of poles leaning every which way with slack lines and broken insulators, is not the kind of a line you want for looks, durability and efficiency any more than you would pick an army of that class to do duty as an efficient fighting machine or police force.

If the government is to allow you to keep your men at home on the plea that they are needed for the maintenance of the service, it is to be supposed that common prudence would suggest that they be used for the keeping of your system in the best possible shape.

Of course the generals and other high officials seldom go to the actual firing lines for duty, but upon them devolves the labor of wise, efficient and practical planning of the campaigns so that the work of the common soldiers at the front will not be wasted. Upon the managers of telephone plants should rest the duty of practical planning that should lead to each day's work being an advance step and not a slacking backwards in the general scheme of the plan to give your community the best telephone service possible in this time of national stress.

As you have only service to sell, so has the man on the firing line. And the quality of that service is of as much importance in the one place as the other, in the long run.

In the final analysis, we are all soldiers and should so consider ourselves, though we are not called on to line up in columns and brigades to march and trench and shoot. Being soldiers in our own estimation should reflect itself in these times by giving us, each and all, the bearings of real soldiers in our carriages and deportment. Our walk should be more like the upright gait of the soldier, and our conduct always becoming what we, as inspectors, would expect of enlisted men if we were called on to review them.

A sobering effect on the people of the country will be noted from now on. In the place of a happy-go-lucky state of affairs will come a spirit of determination to achieve an end to which the nation, as a whole, is committed. We shall lose our spirit of levity, but will gain in its place a spirit of courage and determination, justified by our knowledge that the country is a unit in backing up the program to which we are already committed.

APHORISM: Arguing in front of a gun availeth naught. Get behind one.

Overhead Wire Lines and Inductive Interference.

At the special meeting of the National Electric Light Association held in New York, in place of the regular annual convention, the committee on overhead lines and inductive interference presented its report. The report outlines the status of inductive interference as regards ground-return rural telephone lines, metallic circuits and series lighting circuits.

It emphasizes the importance of power company engineers co-operating with telephone engineers in the solution of these problems and informing themselves as to the principles on which means for mitigation of induction are based, so that they may be thoroughly familiar with the conditions which are likely to lead to inductive troubles. The report also outlines the progress made in various states during the year on rules affecting overhead line construction and indicates their relation to the National Safety Code.

While no uniform solution has been found for these problems, power companies have, in general, taken the position that grounded telephone circuits are not a standard or approved method of construction, and that the telephone company could not insist upon any changes by the power company until it had put its own lines in standard condition. However, power companies have, in some cases where lines are owned by farmers, borne a portion of the expense of making the circuit metallic, as a matter of public policy.

The report embodies an appendix, written by J. B. Taylor, outlining some of the fundamental principles of inductive interference.

From Factory and Salesroom

Convention: North Dakota, Minot, June 21 and 22

Facilitating the Routing of Apparatus in a Large Factory.

The routing of apparatus through an enormous factory, from the first process, under which the raw material must go upon receipt on the receiving room platform to the finished equipment, which leaves the plant boxed or safely crated, is an important and intricate journey.

The matter of efficient factory routing is a subject so large that only the man who has tried to improve on some existing systems can well appreciate.

In order to care for this question intelligently the Kellogg Switchboard & Supply Co., which is extremely proud of the production record of its big plant, has recently installed a number of motor trucks and trailers designed particularly to handle the unfinished product of the establishment in transit from department to department.

Electric Truck for Routing Unfinished Apparatus.

These Kellogg electric trucks, one of which is shown in the accompanying illustrations, carry a large amount of stock, and are a great aid in efficient handling of telephones and switchboard parts from department to department in process of manufacture and assembling.

Modern Appliance Co. Moves to New Factory in Indiana.

The Modern Appliance Co., of Chicago, manufacturer of office specialties and the Sperry telephone bracket, is moving its factory to a large new plant at Rushville, Ind. The new building is 50 by 165 feet, of modern construction and fully equipped with a capacity for turning out 5,000 complete Sperry brackets per day. Contracts now pending for early fall delivery will tax this capacity to the utmost, but the company owns sufficient ground adjoining its present building to double the capacity on short notice when required.

The present sales office at 19 S. La Salle street, Chicago, in charge of Samuel G. Kuhlen, will be retained and all orders will be handled from there.

The growth of the Modern Appliance Co. has been remarkable, having reached its present proportions in less than one year's active contact with the trade.

In its advertising, the company features the slogan, "$3.50 not $5.00" and it is to this perhaps that it owes a large part of its success.

New Bulletin on Exchange Ringing Equipment.

The Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y., has just issued Bulletin No. 1019 on "Exchange Ringing Equipment," the front cover of which is reproduced in the accompanying illustration. Exchange ringing equipment for generating current for straight ringing systems and harmonic ringing systems is described and illustrated. In detail the bulletin takes up the Stromberg-Carlson pole changer type converter which it supplies to exchanges serving 500 to 2,000 subscribers and adaptable for operation from either dry or storage batteries.

A direct ringing vibrator converter which is designed to operate in direct connection with 110-volt alternating current circuits having a commercial frequency of 60 cycles is also described. The converter changes the frequency of the current from 60 cycles to 16 or 20 cycles and reduces the current voltage to the proper value for telephone ringers; namely, 90 or 100 volts.

Another type of converter is the direct ringing static converter which is designed for use with 110 or 220-volt, 25-cycle alternating current circuits.

Power generators for use in exchanges of any size up to and including 1,800 subscribers are described, while several combinations of ringing motor generator sets are illustrated and the construction outlined.

Considerable space is devoted to harmonic converters which are used to transform direct current at a potential of 24 volts into four separate and distinct ringing currents at the constant frequencies and voltages required by the Stromberg-Carlson party line signaling system. A copy of the bulletin may be obtained from the Stromberg-Carlson company upon request.

Cover of New Stromberg-Carlson Bulletin.

Important Improvements Recently Made to Calculagraphs.

The Calculagraph Co. has moved its offices from 9-13 Maiden Lane, New York City, to 30 Church street, New York City. The company recently shipped 75 calculagraphs across the Atlantic to be used in telephone service at The Hague and Rotterdam, Holland.

Improvements have been made in the Model 6 calculagraph. They include the addition of a new train of gear wheels for driving the elapsed time-printing dials direct from a rapidly-revolving member of the clock near the escapement. Slack or back-lash in the gearing is thus eliminated and possibility of an error in the record of elapsed time reduced to a minimum when the operating levers are improperly operated by being struck or jerked forward and allowed to snap back.

A retaining spring provided in the new train of gear wheels will correct an error caused by an operator absent-mindedly holding the printing lever down.

A new type of gateway through which a toll ticket may enter the calculagraph from the left or from in front has been devised. This gate permits a record to be made upon the ticket without holding it in position in one hand while operating the lever with the other. It also removes the danger of folding the inked ribbon or pushing it out of position by the insertion of the ticket in an improper manner.

It is stated that none of the improvements in the construction of the calculagraph, which have been made in the past 22 years, has been more useful or important than these recently developed. They not only make the record more accurate, but also tend to make the machine more nearly fool-proof. The improvements will appear in all the new Model 6 and 6X calculagraphs which the company makes from now on. They may also be added to calculagraphs now in service when sent in for general repairs.

The calculagraph has been used for many years by telephone companies for recording the elapsed time on toll messages. That they are satisfactory for this purpose is evidenced by the number of telephone companies which have repeatedly placed orders for additional instruments. Among these companies may be mentioned the Coos & Curry Telephone Co., of Marshfield, Ore. This company has been using a calculagraph for 18 years, and recently ordered additional ones, thus indicating that its use of the calculagraph has been satisfactory.

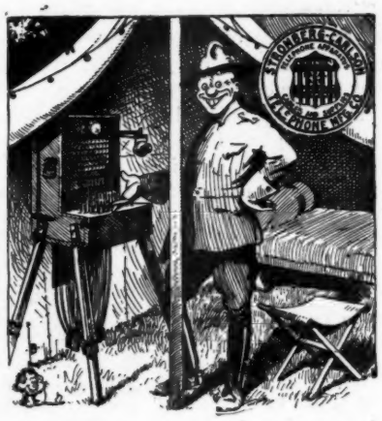
Engineer and Sales Manager for the Frank B. Cook Co.

The Frank B. Cook Co., Chicago, announces that J. G. Mitchell is now associated with it in the capacity of engineer and sales manager. Mr. Mitchell is well known to TELEPHONY's readers as author of "Telephony's Home Study Course for Telephone Men." He has had the technical training and experience, combined with commercial work, which especially fit him for his new position with the Cook company.

More Independent telephone men will now undoubtedly have the opportunity of becoming personally acquainted with Mr. Mitchell through his new connection with the Cook company, as he is an enthusiastic booster of Cook products and plans on calling at many exchanges.

Phoney Bill Joins the United States Signal Corps.

Phoney Bill, as may be seen in the accompanying illustration from the June blotter calendar of the Stromberg-Carlson Telephone Co., has joined the Signal



"Uncle Sam Uses 'Quality Apparatus,' Too."

Corps and is "doing his bit" for his country. Another reason for Phoney Bill's enthusiasm in helping "Uncle Sam" uphold the cause of democracy and righteousness is the fact that "Uncle Sam uses 'quality apparatus,' too."

Condensed Telephone News

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items Relating to Construction, Rebuilding, or Changes in Their Plants and Systems

New Telephone Companies and Incorporations.

LATON, CAL.—The Laton Telephone Co. has been incorporated as a mutual company with a capital stock of $10,000. I. Teilman, T. D. Marshall and A. B. Smith are directors of the corporation.

SACRAMENTO, CAL.—Articles of incorporation of the Delta Telephone & Telegraph Co., organized to construct and operate a telephone and telegraph system in Sacramento county, have been filed. The capital stock is $350,000 and the incorporators are H. W. Glensor, Scott Hendricks, E. V. Kenney, A. D. Downing, H. J. Edwards, of San Francisco; A. J. Miller, of Berkeley, and W. E. Hills.

WEST POINT, GA.—The Interstate Telephone Co. has been incorporated with a capital stock of $10,000. The incorporators are T. C. Lanier, and others.

ROYAL CENTER, IND.—Articles of incorporation have been filed by the Royal Center Telephone Co., with a capital stock of $20,000. The directors are W. B. Ford, Bertha Ford, and G. S. Akers.

WINGATE, IND.—The Akers Telephone Co. has been incorporated with a capital stock of $20,000. The incorporators are G. S. Akers, Mary Akers, and H. T. Ristine.

ATCHISON, KANS.—The Potter Telephone Co. has been incorporated with a capital stock of $7,500.

GREENSBURG, KY.—The Greensburg & Thurslow Telephone Co. has been organized by E. E. Perkins, W. B. Helm, L. C. Taylor and others, with a capital stock of $600. E. E. Perkins will be manager.

RANGELEY, MAINE. — The Rangeley Telephone Co. has been incorporated with a capital stock of $10,000. G. E. Russell, Henry Robash, K. C. Riddle, O. R. Rowe, J. A. Russell, C. E. Nile, D. E. Lune of Phillips are the incorporators.

GREYCLIFF, MONT.—Fred Grill, Sidney Fraser and P. O. Terland have incorporated the Bridger Creek Telephone Co. with a capital stock of $2,000.

RUSO, N. D.—A charter has been issued to the Strawberry Lake Telephone Co., which plans to build a line 100 miles long at an expense of $8,500. The incorporators are Theo. Bjorka, T. H. Johnson and Fred Wilmousky.

WELLSTON, OKLA.—The Spring Valley Union Rural Telephone Co. has been incorporated with a capital stock of $100. G. W. Spence, J. T. Goggin, J. H. Green and Andrew Orr are the incorporators.

CANTON, S. D.—The Lincoln County Farmers Telephone Co. has been incorporated with a capital stock of $25,000. The incorporators are M. L. Holter, J. I. Sheldon, P. M. Juel and E. Holter.

CHAMBERLAIN, S. D.—The Fort Hale Telephone Co. has been incorporated with a capital stock of $1,000. The incorporators are Wm. Dinehart, A. P. Long and A. L. Dinehart.

BANDERA, TEXAS.—The Bandera Independent Telephone Co. has been incorporated with a capital stock of $3,000.

LYONS, TEXAS.—W. W. Matejowsky, O. A. Schatz and J. M. Murray have incorporated the Lyons Telephone Co. with a capital stock of $2,500.

ROSENBERG, TEXAS. — The Fort Bend Telephone Co. has been incorporated with a capital stock of $30,000. C. H. Waddell, J. H. Waddell, G. F. Waddell are the incorporators.

SAN DIEGO, TEXAS.—The Garcia Telephone Co. has been incorporated with a capital stock of $5,000. S. Garcia, Sr., S. E. Garcia and C. G. Palacios are the incorporators.

BEVERLY, W. VA.—J. J. Doerr, C. A. Wees, H. H. Daniels of Beverly; J. H. Schoonover, and A. E. Lytle of Elins, have incorporated the Beverly Telephone Co. with a capital stock of $5,000.

MT. LOOKOUT, W. VA.—The Mt. Lookout Telephone Co. has been incorporated with a capital stock of $5,000. The incorporators are C. A. McClung, L. O. McClung, L. E. Moses, W. H. Legg and O. H. Evans.

Construction.

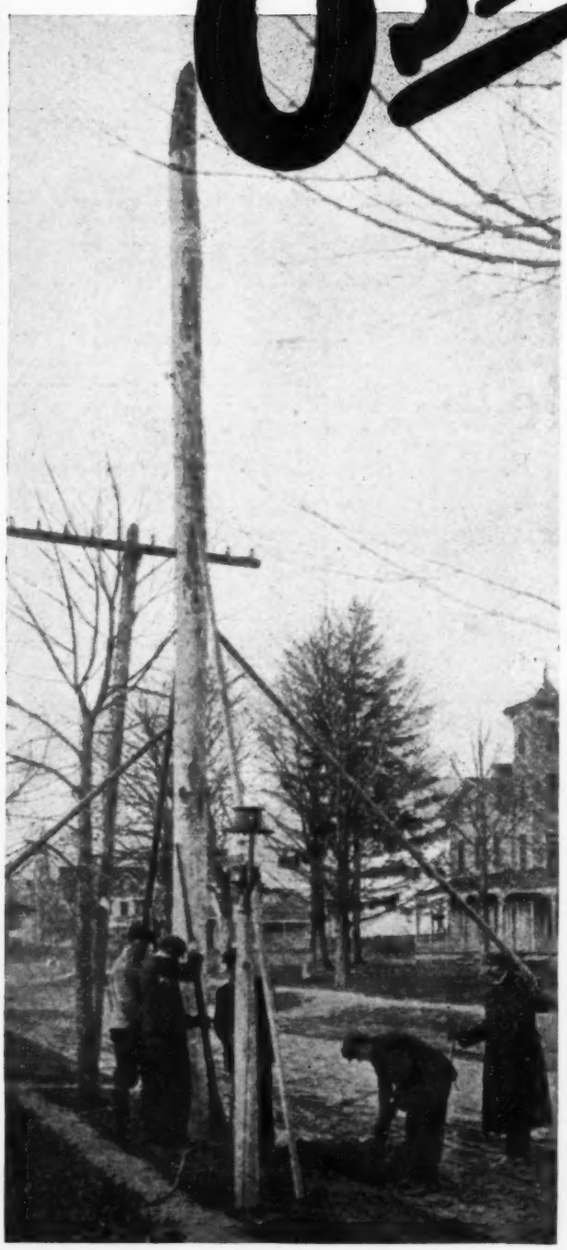
WHITESBURG, KY. — The Whitesburg Telephone Co., C. W. Magee, manager, will construct local and long distance lines this summer between Whitesburg, Harlan and Benham.

BLUEFIELD, W. VA.—The Bluefield Telephone Co. will erect a warehouse of concrete and steel, three stories high, the approximate cost to be about $15,000.

Financial.

HAZARD, KY.—The Hazard Telephone Co. is increasing its capital to $25,000 and plans improvements during the summer and fall months. Local and long

Steady your Poles with OSHKOSH PIKE POLES



It's a serious matter to have even one of the pike poles break while the earth is being tamped down.

It may mean injured workmen or damaged property on the right of way.

There's little danger where Oshkosh Pike Poles are used.

The wood is carefully selected and properly seasoned.

The tip is made of durable metal with the proper amount of strength.

You can trust an Oshkosh Pike Pole to do its part of the job right. That's true, too, of the complete line of Oskosh Tools—

"THE SERVICE-QUALITY TOOLS"

Complete stocks always ready at

Amarillo, Texas, Nunn Electric Co.
Baltimore, Md., Southern Electric Co.
Boston, Mass., Pettingell-Andrews Co.
Buffalo, N. Y., Robertson-Cataract Electric Co.
Butte, Mont., Montana Electric Co.
Cedar Rapids Iowa, J. B. Terry Co.
Chicago, Ill., Central Electric Co.
Chicago, Ill., Illinois Electric Co.
Cincinnati, Ohio, Post-Glover Electric Co.
Cleveland, O., Lockwood-Luetkemeyer-Henry Co.
Dallas, Texas, Southwest General Electric Co.
Dallas, Texas, Electric Appliance Co.
Fort Wayne, Ind., Protective Electric Supply Co
Indianapolis, Ind., Drew Electric & Mfg. Co.
Jacksonville, Fla., Florida Electric Co.
Kansas City, Mo., B.-R. Elec. & Tel. Mfg. Co.
Kansas City, Mo., Funsten Electric Co.
Lincoln, Nebr., Korsmeyer Co.
Los Angeles, Cal., Pacific States Electric Co.
Louisville, Ky., Jas. Clark, Jr., Electric Co.
Memphis, Tenn., Electric Supply Co.
Milwaukee, Wis., Julius Andrae & Sons Co
Minneapolis, Minn., Northern Electric Co.
New Orleans, La., Electric Appliance Co.
New Orleans, La., Interstate Electric Co.
New York, N. Y., Northwestern Elec. Equip. Co.
Norfolk, Va., Woodhouse Electric Co.
Omaha, Nebr., McGraw Co.
Omaha, Nebr., Mid-West Electric Co.
Philadelphia, Pa., H. C. Roberts Elec. Supply Co.
Philadelphia, Pa., Rumsey Electric Co.
Philadelphia, Pa., Powell-Cloudis & Co.
Pittsburgh, Pa., Union Electric Co.
Portland, Ore., Pacific States Electric Co.
Portland, Ore., Fobes Supply Co.
Richmond, Va., Tower-Binford Electric Co.
Salt Lake City, Utah, Inter-Mountain Elec. Co.
San Francisco, Cal., Pacific States Electric Co.
Seattle, Wash., Pacific States Electric Co.
Seattle, Wash., Fobes Supply Co.
Seattle, Wash., Washington Electric Supply Co.
Sioux City, Iowa, The McGraw Co.
St. Joseph, Mo., Columbian Electric Co.
St. Louis, Mo., Wesco Supply Co.
St. Paul, Minn., Northwestern Electric Equip. Co.
St. Paul, Minn., St. Paul Electric Co.
Syracuse, N. Y., Mohawk Electric Supply Co.
Syracuse, N. Y., H. C. Roberts Elec. Sup. Co.
Waco, Texas, Waco Electric Co.
Washington, D. C., National Elec. Supply Co.

Western Electric Company
INCORPORATED

New York	Atlanta	Chicago	Kansas City	San Francisco
Buffalo	Richmond	Milwaukee	St. Louis	Oakland
Newark	Savannah	Indianapolis	Dallas	Los Angeles
Philadelphia	New Orleans	Detroit	Houston	Seattle
Boston	Birmingham	Cleveland	Oklahoma City	Portland
Pittsburgh	Cincinnati	Minneapolis	St. Paul	Omaha	Denver	Salt Lake City

EQUIPMENT FOR EVERY ELECTRICAL NEED
Member Society for Electrical Development. "Do it Electrically"

OSHKOSH MFG. CO.
OSHKOSH, WIS.

distance lines will be constructed into Perry county.

SELBY, S. D.—The Walworth County Farmers Telephone Co. has increased its capital stock from $6,000 to $20,000. A. C. Dobson is president and G. B. Walter secretary.

Elections.

HARVARD, ILL.—At the recent meeting of the Harvard Telephone Co. H. D. Crumb was re-elected president, Richard Phalen, vice-president and F. F. Axtell, secretary.

HAZLETON, PA.—Col. H. C. Trexler and Col. E. M. Young, of Allentown, and L. Peckitt, of Catasauqua, were re-elected directors of the Consolidated Telephone Co. at its annual meeting recently held, the other members of the board being A. Markle, H. A. Bishop, C. J. Kirschner, Geo. A. Rick, Murray Gibson, L. A. Watres, I. A. Stearns and G. R. Belford.

FOREST CITY, ILL.—At the annual election of the Forest City Telephone Co., held recently, E. L. Langston was re-elected president, O. S. Biggs, of San Jose, vice-president, to succeed P. S. Ingersoll, and Roscoe Smith, present manager at San Jose, was elected secretary-treasurer.

"The Cope" Established 30 years

Conduit Rods
Cable Racks
Cable Reel Jacks
Bonding Plates
Bonding Wire
Guard Rails, etc.

Send for Catalogue

T. J. Cope
Manufacturer of Underground Equipment and Tools
1620 Chancellor St., Philadelphia, Pa.
New York Office: 114 Liberty Street
REPRESENTATIVES
The Electric Material Co. 589 Howard Street San Francisco, Cal.
Chas. Farnham 207 I. W. Hellman Bldg. Los Angeles, Cal.

BUSINESS OPPORTUNITY

Growth of other departments forces manufacturer to offer for sale a department which puts out a product extensively used and highly regarded in the telephone field. Our only reason for disposing of this department is that with the growth of other business we are unable to do our telephone business justice. This is a splendid opportunity for a party with $8,000 to $12,000 capital. The devices we sell to the telephone industry are protected by broad patents. Investigation invited.
Address MANUFACTURER, care Telephony.

ADLETS

GUSTAV HIRSCH, M.E.
CONSULTING ENGINEER
COLUMBUS, OHIO
Appraisal Construction Reports

CONDUIT COUPLING RODS
Harold L. Bond Company
BOSTON - - - MASS.

UNIVERSAL TEST CLIPS

For Your Test Sets From Your Jobber or
Sample, postpaid, 15c
R. S. MUELLER & CO., 420 High Ave., Cleveland, O.

FRANK F. FOWLE
Consulting Electrical Engineer
CHICAGO, ILL.

STUDIES VALUATIONS
JAY G. MITCHELL
TELEPHONE ENGINEER
1440 LUNT AVE., CHICAGO, ILL.
SUPERVISION PLANT

MID-WEST SUPPLY COMPANY
Construction Material and Supplies
Square deal, try us
PLYMOUTH, IND.

J. K. JOHNSTON
Telephone Engineer and Appraiser
1912 Talbott Ave.
INDIANAPOLIS, INDIANA
25 Years' Experience. High Class Reference

Chapman Arresters
More than Pay for their Installation by the Service they Protect.
MINNESOTA ELECTRIC CO.
Minneapolis, Minn.

Central Lumber Company
Manufacturers
Yellow Pine Cross Arms, Pins and Brackets. Write us.
CHATTANOOGA - TENNESSEE

ROEBLING
DOUBLE GALVANIZED
TELEPHONE WIRE
E. B. B., B. B. and Steel Grades
John A. Roebling's Sons Company
Trenton, New Jersey

RELIABLE TELEPHONE SUPPLIES
from firms that are equipped to supply the needs of the industry may be obtained by patronizing the advertisers on these pages.

OPPORTUNITIES (Continued from page 43)

Sandwich Pole-Changers
PARTS AND REPAIRING
RAILWAY TELEPHONE MFG. CO.
9 So. Clinton St., Chicago, Ill.

EVEN IF THERE IS SOME PART OF YOUR APPARATUS which is almost worn to a "frazzle," don't ditch it—send it to our repair experts. They'll make it like new. We give the same attention to a small as well as a large order. The Suttle Equipment Co., Olney, Ill.

WE STILL HAVE a quantity of Kellogg line, cut-off and cord circuit relays in good-as-new condition. Contacts are platinum. Also have Kellogg No. 5 and No. 16 lamp jacks and No. 3 and No. 16 springjacks. This equipment may be had at a substantial discount from new prices and affords an unusual opportunity to those who contemplate additions. Indianapolis Telephone Co., Indianapolis, Ind.

Please tell the Advertiser you saw his Advertisement in TELEPHONY.